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WILLIAM ALPHONSO MURRILL

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ILLUSTRATIONS OF FUNGI

MYCOLOGIA

VOL. II MARCH, 1910 NO. 2

ILLUSTRATIONS OF FUNGI—VI.

WILLIAM A. MURRILL

The species represented on the accompanying plate belong chiefly to the Boletaceae, a family of fleshy, pore-bearing fungi containing about seventy-five North American species, distributed in eleven genera. Most of the members of this family are edible, but, owing to the difficulty of distinguishing the few inedible species, they should be selected with the greatest care when collected for the table.

Tricholoma personatum (Fries) Quél.

MASKED TRICHOLOMA. BLEWITS

Plate 19. Figure 1. × ½

Pileus thick, firm, convex to expanded, 5–12 cm. broad; surface moist, glabrous, lilac or purple, fading to grayish, becoming slightly brownish on the disk; margin inrolled and frosted when young, glabrous and often irregular with age; flesh white, firm, pleasant to the taste; gills crowded, rounded behind, free or nearly so, violet or lilac, becoming dull-colored with age; spores ellipsoid, smooth, dingy-white, dull pinkish in mass, 7–10 μ long; stem short, solid, often bulbous at the base, fibrillose to glabrous, lilac or violet, 3–6 cm. long, 1.5–3 cm. thick.

This species is of good flavor and not easily confused with dangerous species. It may be found in open woods or among long grass in rich fields during the autumn months. Its large size and the violet or lilac tint of all its parts should distinguish it from most other species. In large, mature specimens, the flesh becomes soft and readily absorbs water during wet weather,

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which somewhat changes the appearance of the mushroom and lessens its value for edible purposes.

Ceriomyces communis (Bull.) Murrill

COMMON CERIOMYCES. GOLDEN-FLESH BOLETUS

Plate 19. Figure 2. × ⅔

Pileus convex to expanded, depressed at times with age, gregarious, 4–8 cm. broad, 1–2 cm. thick; surface dry, tomentose to floccose-squamulose, often rimose-areolate, variable in color, usually some shade of red or purple, fading to brown; margin entire, fertile; context yellowish-white to flavous, reddish beneath the cuticle, usually changing slowly to greenish or bluish when wounded, especially near the tubes, taste mild; tubes adnate, convex in mass, slightly decurrent, becoming much depressed at times with age, yellow or greenish-yellow, changing to greenish-blue when wounded, mouths large, angular, irregular, 1–2 to a mm.; spores fusiform, smooth, olivaceous when fresh, fading to pale-brownish, 11–13 × 4–5 μ: stipe subcylindric, often contorted, tapering at the base, flavous above, red or streaked with red below, longitudinally furrowed, glabrous or minutely scurfy, solid, sometimes yellow within at the base, 3–8 cm. long, 0.3–1.5 cm. thick.

This species is, in most localities, the most common and abundant member of the family, being the first to appear on mossy banks in early summer and continuing to fruit until late autumn. It is usually rather small, with reddish cap and stem, and large, yellow tubes, which turn blue when wounded. It is sometimes difficult to secure specimens for the table on account of a whitish mould which appears to be particularly prolific on this species.

Marasmius oreades (Bolt.) Fries

FAIRY-RING MUSHROOM. SCOTCH BONNETS

Plate 19. Figure 3. × ⅔

Pileus convex to expanded, often umbonate, slightly striate at times when moist, fleshy-tough, drying easily, 2–5 cm. broad; surface glabrous, buff or tawny, fading with age or on drying; flesh thin, white, of pleasant odor and taste; gills broad, distant, free or adnexed, yellowish-white; spores subellipsoid, smooth, hyaline, 7–9 μ long; stem cylindrical, rather slender, solid, tough, yellowish-white, villose-tomentose, 5–8 cm. long, 2–4 mm. thick.

This very excellent little species is to be looked for in pastures during spells of wet weather in late summer or autumn. Its habit of growing in circles will aid one in recognizing it. I have found it much more abundant in England and other parts of Europe than in this country. If found in sufficient quantity for table use, it should be cooked for some time, owing to its tough texture.

Ceriomyces subsanguineus (Peck) Murrill

TESTACEOUS CERIOMYCES

Plate 19. Figure 4. × ⅔

Pileus convex to plane or slightly depressed, gregarious or cespitose, 5–11 cm. broad, 1–3 cm. thick; surface usually glabrous, somewhat viscid, testaceous, fading to ochraceous or isabelline, rarely pulverulent or partially rimose-areolate; margin obtuse, beveled; context thick, white, firm, changing slightly to very pale-roseous when wounded, slightly harsh or bitterish at first to the taste, but becoming mild; tubes truly adnate, separating slightly in old plants, decurrent, 5–7 mm. long, pale-yellowish, becoming brownish to purplish when bruised, mouths of medium size, edges thin; spores oblong-ovoid, smooth, very pale-yellowish, 8–9 × 3.5–4.5 μ: stipe rather short, thick, tapering downward to a small radicate base, 4–7 cm. long, 1–2 cm. thick, nearly white, finely scurfy, sometimes reddish-dotted, flavous and reticulate above, solid, firm and white within.

This species is very rare, being known only from three localities, one in Pennsylvania and two in New Jersey. It grows under beech trees or in beds of moss. The conspicuous reddish or orange color of the cap soon fades, especially in bright light.

Fistulina hepatica (Huds.) Fries

BEEFSTEAK FUNGUS. VEGETABLE BEEFSTEAK

OAK TONGUE. CHESTNUT TONGUE. BEEF TONGUE

Plate 19. Figure 5. × ½

Pileus large, fleshy, very juicy, dimidiate to flabelliform, 5–15 cm. broad; surface dark-red, somewhat sticky when moist, radiate-striate with age, margin entire to lobed; flesh thick, soft, tough, streaked with dark- and light-reddish lines, acid to the taste; tubes at first short, yellowish or pinkish, becoming 3 mm. long, plainly distinct from one another, and dull-ochraceous with

age; spores ellipsoid, smooth, yellowish, 5–7 μ long; stipe usually short and thick, lateral, colored like the pileus, often reduced to a mere tubercle and sometimes wanting.

This species occurs on decaying trunks and stumps of chestnut, oak, and certain other deciduous trees in this country and in Europe. On account of its resemblance to a piece of beefsteak, it has long been recognized and used for food. It should be thoroughly cooked, and, if the acid flavor is objectionable, sodium carbonate should be added during the process of cooking. I have found this fungus much more common on chestnut than on oak, and I have noticed that foreigners regularly visit old chestnut stumps and trunks in the vicinity of New York during late summer and autumn to obtain it. Since the chestnut trees have all been killed by the canker, the beefsteak fungus should appear in great quantity.

Ceriomyces subtomentosus (L.) Murrill

SUBTOMENTOSE CERIOMYCES. YELLOW-CRACKED BOLETUS

Plate 19. Figure 6. $\times \frac{2}{3}$

Pileus convex to expanded, 4–10 cm. broad; surface dry, tomentose, often rimose-areolate, yellowish-brown, reddish-brown or subolivaceous; margin entire, often involute when young; context white or yellowish, unchanging, yellow beneath the cuticle, taste mild; tubes adnate or slightly depressed, often becoming nearly free, yellow, unchanging when wounded, greenish-yellow at the maturity of the spores, mouths large, irregular, sometimes compound; usually angular; spores greenish when fresh, fading to yellowish-brown, subfusiform, smooth, 10–12 $\times$ 4–5 μ; stipe ventricose or nearly equal, tapering below, furfuraceous to glabrous, even, or wholly or partially reticulate, pale-yellow or slightly brownish, often flavous above, reddish-brown when bruised, solid, white or yellowish within, 4–6 cm. long, 0.5–1.5 cm. thick.

This species, like the golden-flesh boletus, is generally distributed in deciduous woods throughout Europe and temperate North America and is often eaten. The cap is usually yellowish-brown or olive-tinted and the stem and large tubes are yellow, the latter not becoming blue when wounded, as is the case in *C. communis*.

Boletinellus merulioides (Schw.) Murrill

ECCENTRIC-STEMMED BOLETINELLUS

Plate 19. Figure 7. $\times \frac{2}{3}$

Pileus thin, irregular, usually lobed, more or less deeply depressed at maturity, gregarious, 5–12 cm. broad; surface dry, minutely tomentose, dull reddish-brown; margin undulate or deeply lobed: context 5–10 mm. thick, yellow, changing slowly to bluish-green when wounded, having a musty or unpleasant odor; tubes decurrent, hymenium honey-yellow when young, becoming dull-yellow with age, often changing slightly to blue when wounded; tubes formed by radiating lamellae 2–3 mm. apart, branching and connected by numerous irregular veins of less prominence; spores subovoid to ellipsoid, smooth, yellow to brownish-ochraceous, 8–11 $\times$ 5–7 μ: stipe lateral or eccentric, tough, expanded into the pileus, reticulate at the apex by the decurrent walls of the tubes, concolorous, clothed like the pileus, hollow, 1–3 cm. long, 8–12 mm. thick.

This species occurs throughout the eastern United States in low places or on shaded banks, especially about stumps and decaying roots. It is dull reddish-brown above and yellow below, with very large tubes and eccentric or lateral stem. It is not generally considered edible.

THE HYPOCREALES OF NORTH AMERICA—III.

FRED J. SEAVER

(WITH PLATES 20 AND 21, CONTAINING 37 FIGURES)

Family II. HYPOCREACEAE

Stromata conspicuous, seated directly on the substratum or springing from a sclerotium in the bodies of insects, fungi, or the ovaries and stems of plants, effused without definite margin, patellate, substipitate or erect; perithecia partially to entirely immersed in the stroma, rarely subsuperficial (especially in aged specimens); asci cylindrical or clavate, 8–16-spored; spores subglobose to filiform, simple or compound, hyaline or colored.

Stroma seated directly on the substratum, usually patellate or effused, rarely clavate and erect; spores rarely filiform.	HYPOCREAE.
Stroma springing from a sclerotium, usually erect and clavate, rarely depressed; spores filiform.	CORDYCEPTEAE.

Tribe III. HYPOCREAE

Stromata patellate or effused, rarely clavate and erect, not springing from a sclerotium; perithecia partially to entirely immersed, papillate, with the neck often protruding; asci cylindrical or clavate, 8–16-spored; spores subglobose, elliptical, fusiform or filiform, simple or compound, hyaline or simple.

Asci 16-spored (by the separation of each original spore into two subglobose cells).	
Stroma patellate or effused.	
Spores hyaline.	23. HYPOCREA.
Spores becoming greenish or brownish.	24. CHROMOCREA.
Stroma clavate and vertical.	25. PODOSTROMA.
Asci 8-spored; spores elliptical, fusiform or filiform.	
Stroma with stilbum-like outgrowths.	26. STILBOCREA.
Stroma without stilbum-like outgrowths.	
Spores elliptical to fusiform.	
Spores simple or doubtfully septate.	
Spores colored.	27. CHROMOCREOPSIS.
Spores hyaline.	

Stroma very scant; perithecia subsuperficial. 28. BYSSONECTRIA.
Stroma profuse; perithecia immersed. 29. PECKIELLA.
Spores 1-septate, fusiform or subfusiform.
Stroma cottony or subfleshy; spores fusiform. 30. HYPOMYCES.
Stroma fleshy; spores elliptical. 31. HYPOCREOPSIS.
Spores filiform.
Perithecia enclosed in a membranaceous wall. 32. OOMYCES.
Perithecia not enclosed in a membranaceous wall.
Stroma very scant, cottony, white. 33. BARYA.
Stroma subfleshy, of variable color.
Stroma sheathing, on stems of grasses. 34. TYPHODIUM.
Stroma patellate or subpatellate. 35. HYPOCRELLA.

DOUBTFUL GENERA

Glaziella. Fruit unknown.

23. HYPOCREA Fries, Syst. Orbis Veg. 104. 1825

Stroma subglobose to patellate, fleshy or subfleshy, usually with an abrupt margin which in older specimens is more or less free, or irregular in outline and effused without definite margin; perithecia entirely immersed, subglobose or ovate with the necks slightly protruding; asci cylindrical originally with 8 spores, each of which separates into 2 subglobose or slightly cuboid cells, at maturity 16-spored; spores subglobose or cuboid, hyaline.

Type species: *Sphaeria rufa* Pers.

Distinguished by the 16-spored asci and hyaline spores. There is so little variation in the spores of the species of this genus that we must depend almost entirely upon gross characters for diagnoses of species.

Stromata patellate, with definite outline, for the most part on wood and bark.
Stromata dark colored, dark red, brown or purplish-black.
Stromata red or brown.
Stromata reddish-brown or dark brown. 1. *H. rufa.*
Stromata wine-colored or dark red. 2. *H. scutellaeformis.*
Stromata purplish-black or olive.
Stromata purplish, large, .5–1 cm. in diameter. 3. *H. lenta.*

Stromata olivaceous, small, 1–2 mm. in diameter. 4. *H. minima.*
Stromata bright colored, whitish or bright yellow.
Stromata whitish. 5. *H. chionea.*
Stromata bright yellow. 6. *H. patella.*
Stromata effused, spreading irregularly, with no definite outline.
Occurring on wood and bark.
Stromata very dark olivaceous. 7. *H. olivacea.*
Stromata bright lemon-yellow. 8. *H. sulphurea.*
Occurring on fungi.
Stroma bright colored.
Stroma orange, on *Tyromyces*. 9. *H. aurantiaca.*
Stroma lemon-yellow, often fading. 10. *H. citrina.*
Stroma dull pallid or whitish.
On *Tyromyces* and related plants. 11. *H. pallida.*
Forming rings on cups of *Cyathus*. 12. *H. latizonata.*

1. HYPOCREA RUFA (Pers.) Fries, Summa Veg. Scand. 383. 1849

Sphaeria rufa Pers. Obs. Myc. 1: 20. 1796.

Stromata gregarious, subhemispherical to patellate, occasionally confluent and more or less irregular but normally quite regular in form, 2 mm. to 1 cm. in diameter (mostly 2–5 mm.), externally brick-red, the margin in young specimens white, later becoming brown and in old specimens often free, becoming darker with age, surface of the stroma roughened by the necks of the perithecia which protrude slightly; perithecia nearly globose, 175–200 mic. in diameter; asci cylindrical, becoming 16-spored, 75–100 × 5 mic. (spore-bearing part 60–75 mic.); spores nearly globose, hyaline with a central oil-drop (*pl. 20, f. 6–8*).

On wood and bark of various kinds and occasionally on old fungi.

TYPE LOCALITY: Europe.

DISTRIBUTION: Maine to N. Dakota and S. Carolina. Probably occurs throughout N. America.

ILLUSTRATIONS: Winter; Rabenh. Krypt. Fl. *pl. 89, f. 1–3;* Lindau, E. & P. Nat. Pfl. *f. 243,* A–D.

EXSICCATI: Ellis, N. Am. Fungi, *157;* Ellis & Everh. N. Am. Fungi, *1552;* Ravenel, Fungi Car. Exsicc. *53.* Other specimens examined: Maine, *Miss. White;* N. Jersey, *Ellis 608;* New York, *Zabriskie;* N. Dakota, *Seaver;* Ohio, *Morgan 936, 940.*

2. HYPOCREA SCUTELLAEFORMIS Berk. & Rav. (nomen nudum); Ellis & Everh. N. Am. Pyrenom. 80. 1892.

Stromata gregarious, patellate or subhemispherical, .5–1 mm. in diameter, with the margin free and slightly undulated, roughened slightly by the protruding necks of the perithecia, externally beautifully wine-colored, becoming darker with age, occasionally blackish, internally white.

On the bark of *Acer rubrum*.

TYPE LOCALITY: Carolina.

DISTRIBUTION: Known only from type locality.

EXSICCATI: Ravenel, Fungi Car. Exsicc. *31*.

The species appears distinct in its color and gross characters. Although the stromata externally seem to indicate the presence of perithecia no asci or spores could be seen.

3. HYPOCREA LENTA (Tode) Berk. & Br. Jour. Linn. Soc. **14**: 112. 1875

Sphaeria lenta Tode, Fungi Meckl. **2**: 30. 1791.
Sphaeria Schweinitzii Fr. Elench. Fung. **2**: 60. 1828.
Sphaeria contorta Schw. Trans. Am. Phil. Soc. II. **4**: 194. 1832.
Sphaeria rigens Fr. Elench. Fung. **2**: 61. 1828.
Hypocrea Schweinitzii Sacc. Syll. Fung. **2**: 522. 1883.
Hypocrea contorta Berk. & Curtis; Berk. Grevillea **4**: 14. 1875.
Hypocrea rigens Sacc. Michelia **1**: 301. 1878.

Stromata gregarious, 2 mm.–1 cm. in diameter, lens-shaped, margin free, often becoming undulated, dark colored externally becoming almost black with a shade of olive-green, white within, fleshy becoming hard when dry; surface roughened by the necks of the slightly protruding perithecia; perithecia subglobose, 150–175 mic. in diameter; asci cylindrical, becoming 16-spored, 60–75 × 4–5 mic.; spores subglobose with 1 large oil-drop, about 4 mic. in diameter.

On wood and bark of various kinds.

TYPE LOCALITY: Mecklenburg, Germany.

DISTRIBUTION: New Jersey to Ontario, California, and Louisiana.

ILLUSTRATIONS: Tode, Fungi Meckl. *pl. 12, f. 102*.

EXSICCATI: Ravenel, Fungi Am. Exsicc. *642;* Ellis, N. Am. Fungi *156*. Other specimens examined: Kansas, *Swingle, Cra-*

gin; Louisiana, *Langlois;* N. Jersey, *Ellis;* Ontario, Canada, *Harkness;* S. Carolina, *Ravenel.*

4. HYPOCREA MINIMA Sacc. & Ellis, Michelia **2**: 570. 1882

Stromata scattered, superficial, patellate or subpatellate, disc orbicular, very dark, almost black, scarcely 1 mm. in diameter; surface roughened by the slightly protruding necks of the perithecia; asci cylindrical, becoming 16-spored, 60–75 × 4 mic.; spores subglobose, hyaline, with 1 large oil-drop, about 4 mic. in diameter.

On bark of *Magnolia.*

TYPE LOCALITY: Newfield, N. Jersey.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: N. Jersey, *Ellis* (cotype).

In color the species resembles *H. lenta* but is distinguished by its very small size.

5. HYPOCREA CHIONEA Ellis & Everh. N. Am. Pyrenom. 79. 1892

Stromata gregarious, subhemispherical becoming patellate or subpatellate, fleshy, 1–2 mm. in diameter, white or very light yellowish, surface roughened by the slightly protruding necks of the perithecia; necks of the perithecia darker in color than the surrounding surface of the stroma, giving it a punctate appearance; asci cylindrical, 50–60 × 4 mic., becoming 16-spored; spores subglobose, with 1 central oil-drop, about 4 mic. in diameter.

On decaying wood on the under side of a log to which may be due its white color.

TYPE LOCALITY: Ontario, Canada.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: Canada, *Dearness* (type).

6. HYPOCREA PATELLA Cooke & Peck, Ann. Rep. N. Y. State Mus. **29**: 57. 1878

Stromata gregarious, patellate and regular is form, consisting of a whitish mycelium with a yellow center, becoming entirely bright yellow, inclined to ochraceous, 1–2 mm. in diameter, margin free, surface punctate with the necks of the perithecia which protrude slightly, somewhat wrinkled when dry; asci cylindrical, 60–75 × 4–5 mic., at first 8-spored, becoming 16-spored by the separation of each original spore into 2 subglobose cells; spores subglobose, hyaline.

On dead wood especially on or surrounding other old sphaeriaceous fungi.

TYPE LOCALITY: Buffalo, N. York.

DISTRIBUTION: New York to Louisiana.

SPECIMENS EXAMINED: New York, *Seaver* (various collections); Louisiana, *Langlois 2181;* West Virginia, *Nuttall 75.*

The description of this species is drawn from material identified by Mr. Peck. The species has been frequently collected by the writer about New York City.

7. HYPOCREA OLIVACEA Cooke & Ellis, Grevillea **6**: 92. 1878

Hypocrea melaleuca Ellis & Everh. Proc. Acad. Nat. Sci. Phil. **1890**: 245. 1891.

Stromata scattered, effused and irregular in form, consisting at first of a patch of thin, white tomentum .5–1 cm. in diameter, becoming fleshy and of an olive shade, gradually becoming darker, at length nearly black and punctate from the slightly protruding necks of the perithecia; asci cylindrical, 65–75 × 3–4 mic. becoming 16-spored; spores hyaline, subglobose, 3 mic. in diameter.

On pine boards, bark of *Sassafras,* and oak chips.

TYPE LOCALITY: N. Jersey.

DISTRIBUTION: Known only from type locality.

ILLUSTRATIONS: Grevillea **6**: *pl. 10, f. 25.*

SPECIMENS EXAMINED: N. Jersey, Ellis *2826* (cotype).

The species forms irregular dark colored patches which on drying break up into a number of smaller parts of variable size and number.

Mr. Ellis seems to have been uncertain as to whether *H. melaleuca* was distinct from *H. olivacea,* the stroma of the former having been described as whitish. When examined during the present season the type of *H. melaleuca* shows the stroma to be decidedly greenish and conforms exactly to *H. olivacea.*

8. HYPOCREA SULPHUREA (Schw.) Sacc. Syll. Fung. **2**: 535. 1883

Sphaeria sulphurea Schw. Trans. Am. Phil. Soc. II. **4**: 193. 1832.

Stroma broadly effused, forming irregular patches often several cm. in diameter, at first consisting of small tufts of white mycelium, the central part soon assuming a lemon-yellow color, at

maturity consisting of a bright lemon-yellow stroma with a pale, whitish margin, color in dried specimens fairly constant, rarely slightly faded; perithecia entirely immersed and appearing as minute glands, slightly darker than the stroma; asci cylindrical, becoming 16-spored by the separation of each original spore into 2 subglobose cells, 80–110 mic. in length; spores about 4 × 5 mic., subglobose or commonly subcubical from mutual pressure, granular within.

On bark of various kinds of trees and shrubs, *Acer, Alnus, Salix, Tilia,* etc., often on *Exidia glandulosa.*

TYPE LOCALITY: Pennsylvania.

DISTRIBUTION: Connecticut to N. Dakota, Alabama and S. Carolina.

EXSICCATI: Ravenel, Fungi Am. Exsicc. *641,* Fungi Car. Exsicc. *52;* Wilson & Seaver, Ascom. & Lower Fungi, *57.* Other specimens examined: Alabama, *Earle, Underwood;* Canada, *Macoun;* Connecticut, *Thaxter;* Delaware (no name); Florida, *Calkins;* Iowa, *Holway;* Louisiana, *Seymour;* N. Dakota, *Seaver;* N. Jersey, *Ellis;* N. York, *Seaver;* Ohio, *Morgan, Lloyd;* Pennsylvania, *Haines, Everhart & Jefferis,* and *Schweinitz* (type).

This species has been commonly known in this country under the name of *Hypocrea citrina* (Pers.) Fries, to which species it is quite similar. Its habitat on bark often where there is no trace of other fungi, its bright color and very large asci and spores seem to be sufficient characters by which it can be distinguished.

In N. Dakota this species has been collected commonly by the writer on dead branches of basswood but was not found in that locality on dead branches of other trees. In other localities it has been commonly reported on other trees and shrubs. Thaxter reports it as occurring in Connecticut only on branches of alders. The species has also been reported by Montagne in Cuba on the bark of trees.

9. HYPOCREA AURANTIACA Peck, Ann. Rep. N. Y. State Mus. **51**[1]: 295. 1898

Stroma effused, overspreading and entirely covering the hymenium of the host, cottony but giving rise to a continuous stroma

equal in extent to that of the hymenium of the host, deep orange, paler near the margin, staining the host of a similar color; perithecia orange, thickly scattered or often crowded near the center of the stroma where the color is much darker, partially immersed in the substratum; asci cylindrical, becoming 16-spored by the separation of each original spore into 2 subglobose cells; spores subglobose or subcubical, 3–4 mic. in diameter.

On *Tyromyces chioneus.*

TYPE LOCALITY: New York.

DISTRIBUTION: New York.

SPECIMENS EXAMINED: New York, *Peck* (type).

Distinguished from *H. pallida* Ellis & Everh. only by its orange color.

10. HYPOCREA CITRINA (Pers.) Fries, Summa Veg. Scand. 383. 1849

Sphaeria citrina Pers. Obs. Myc. **1**: 68. 1796.

? *Hypocrea Karsteniana* Niessl.; Rehm, Hedwigia **22**: 53. 1883.

? *Hypocrea fungicola* Karsten; Winter, Rabenh. Krypt. Fl. 1^2: 141. 1887.

Stroma effused, spreading irregularly often for several cm. occasionally interrupted, subfleshy, at first whitish, at length lemon-yellow with the margin cottony and lighter colored, within whitish, whole stroma becoming more or less faded with age often subpallid; perithecia immersed, numerous, ovoid, yellowish; asci cylindrical, 62–75 mic. long, becoming 16-spored by the separation of each original sport into 2 subglobose cells with the lower slightly longer; individual spores 3–4 mic. in diameter.

On soil, old fungi, etc.

TYPE LOCALITY: Europe.

DISTRIBUTION: Connecticut to N. York.

EXSICCATI: Shear, N. York Fungi, *363.* Other specimens examined: Connecticut, *Thaxter,* Wisconsin.

This species seems to be less common in America than in Europe, although through its confusion with the species *H. sulphurea* (Schw.) Sacc. it has been commonly reported. The species was originally described as terrestrial and an attempt has been made to separate the terrestrial form from that occurring on old fungi. It is doubtful if the two are distinct.

11. HYPOCREA PALLIDA Ellis & Everh. Jour. Myc. 2: 65. 1886

Stroma effused, overspreading and entirely covering the hymenium of the host, cottony but giving rise to an even stratum equal in diameter to that of the host, at first pallid or pale yellow or often with a slight tinge of rust-red, paler near the margin; perithecia thickly scattered and partially immersed in the substratum with the ostiola projecting, amber, darker than the substratum; asci cylindrical, 50–75 × 4–5 mic. becoming 16-spored by the separation of each original spore into 2 subglobose cells; spores 3–4 mic. in diameter, subglobose or slightly cubical.

On the hymenium of species of *Tyromyces*.

TYPE LOCALITY: N. Jersey.

DISTRIBUTION: N. Jersey to Canada.

SPECIMENS EXAMINED: Connecticut (no name); N. Jersey, *Ellis* (various collections); Prince Edward's Island, Canada, *Macoun*.

Hypocrea aurantiaca Peck agrees with this species in habitat and general morphological characters but seems to differ in possessing a decidedly orange color. The various specimens examined would seem to indicate that the difference in color is due to a difference in age as some of the present species examined show a trace of rust-red approaching that of *H. aurantiaca*, and one specimen in the Ellis collection is labeled in the handwriting of Mr. Ellis, *H. pallida* var. *aurea*. Field observation is necessary in order to determine whether the two species are identical but for the present they are allowed to stand.

12. HYPOCREA LATIZONATA Peck; Ellis & Everh. N. Am. Pyrenom. 79. 1892

Stroma consisting of a white subiculum which forms a band 5 mm. in diameter, entirely surrounding the outside of the cups of the host; perithecia thickly gregarious, immersed, with the ostiola protruding, darker colored, brownish-black; asci cylindrical, 60–75 mic. long, becoming 16-spored by the separation of each original spore into 2 subglobose cells; individual spores 3–4 mic. in diameter, the lower of each pair slightly longer (*pl. 20, f. 9–10*).

On the outside of the cups of *Cyathus striatus*.

TYPE LOCALITY: Ohio.

DISTRIBUTION: Known only from the type locality.

SPECIMENS EXAMINED: Ohio, *Morgan* (type).

Distinguished by its habitat and the peculiar ring-like formations of the stroma.

DOUBTFUL SPECIES

Hypocrea cervina Berk. & Curtis, Jour. Linn. Soc. **10**: 376. 1869.

"Stromate irregulari plano, margine obtuso libero cervino subtomentoso, intus subconcolori; peritheciis superficialibus, ostiolis quandoque elongatis cylindricis; sporidiis subglobosis octonis."

On dead wood. Sporidia .00014 inch in diameter. Stroma 2 lines across.

Hypocrea laetior Berk. & Curtis; Berk. Jour. Linn. Soc. **10**: 376. 1869.

"Stromate orbiculari sublobato adnato laete cervino; peritheciis immersis, ostiolis prominulis nigris; sporidiis subglobosis 16."

"On dead wood. Sporidia .0002 inch in diameter, sixteen in each ascus. Stroma 1–1.5 line across. Closely allied to the last" (*H. cervina* Berk. & Curtis).

Hypocrea maculaeformis Berk. & Curtis; Berk. Jour. Linn. Soc. **10**: 376. 1869.

"Tenuis, umbrina, irregularis, ostiolis brunneolis notata; peritheciis elongatis immersis."

"On a hard lemon-coloured, fleshy *Polyporus*, which is probably much altered by the parasite. Forming thin map-like spots. Sporidia .0004 inch long."

Hypocrea ochroleuca Berk. & Rav.; Berk. Grevillea **4**: 14. 1875.

"Effused, thin, ochro-leucous, seated on a pale mycelium, with a barren border, often cracked when old."

Hypocrea polyporoidea Berk. & Curtis, Grevillea **4**: 15. 1875.

"Fawn-coloured; perithecia free, tomentose, with a naked ostiolum seated on a pale crust, here and there elevated, which is thin towards the margin. A very curious species."

On beech, Alabama.

Hypocrea armeniaca Berk. & Curtis, *Hypocrea insignis* Berk. & Curtis, *Hypocrea saccharina* Berk. & Curtis and *Hypocrea parasitans* were described from imperfect material.

EXCLUDED SPECIES

Hypocrea subviridis Berk. & Curtis.
Hypocrea Richardsoni Berk. & Mont.

24. **Chromocrea** gen. nov.

Stromata patellate or subpatellate, whitish, yellowish or reddish to greenish-black, more or less variable in a given species, fleshy; perithecia entirely immersed with necks only slightly prominent; asci cylindrical, becoming 16-spored by the separation of each original spore into 2 subglobose cells; spores colored, greenish or brownish.

Type species: *Sphaeria gelatinosa* Tode.

Distinguished from *Hypocrea* by the colored spores.

Stromata yellowish to greenish-black.
  Stromata sessile, yellowish to green, then greenish-black 1. *C. gelatinosa.*
  Stromata substipitate, yellow, not becoming green. 2. *C. substipitata.*
Stromata brick-red, entirely sessile. 3. *C. ceramica.*

1. **Chromocrea gelatinosa** (Tode)

Sphaeria gelatinosa Tode, Fungi Meckl. **2**: 48. 1791.
Hypocrea gelatnosa Fries, Summa Veg. Scand. 383. 1849.
? *Hypocrea chlorospora* Berk. & Curtis, Grevillea **4**: 14. 1875.
? *Hypocrea chromosperma* Cooke & Peck, Ann. Rep. N. Y. State Mus. **29**: 57. 1878.
Hypocrea viridis Peck, Ann. Rep. N. Y. State Mus. **31**: 49. 1879.

Stromata patellate or subpatellate, fleshy, soft, becoming contracted and wrinkled when dry, at first bright lemon-yellow or yellowish-white becoming punctate with greenish dots, the necks of the perithecia filled with dark colored spores, the entire stroma becoming darker with age, finally greenish or greenish-black 1–4 mm. in diameter; perithecia entirely immersed with the necks slightly protruding and becoming rather prominent in dried specimens; asci cylindrical, becoming 16-spored by the separation of each original spore into 2 subglobose cells; spores at first green, becoming brown, 5 mic. in diameter (*pl. 20, f. 11–13*).

On decaying wood of various kinds.

TYPE LOCALITY: Mecklenburg, Germany.

DISTRIBUTION: Maine to New Jersey and Iowa.

ILLUSTRATIONS: Tode, Fungi Meckl. *pl. 16, f. 123.*

SPECIMENS EXAMINED: Connecticut, *Thaxter;* Indiana, *Underwood;* Iowa, *Seaver, Holway;* Maine, *Harvey;* New Jersey, *Ellis;* Pennsylvania, *Haines.*

The British specimens referred to this name show the surface of the stroma in old specimens to be greenish-black while the base is of a translucent red. The American specimens are more often of a yellowish color with the surface becoming greenish-black. The color in the species is very variable.

2. **Chromocrea substipitata** sp. nov.

Stromata gregarious or occasionally crowded, seated on a sulphur-yellow subiculum, discoid, fleshy, with the margin elevated from the substratum, young plants substipitate; stem short, about 1 mm. thick and 1–2 mm. high, gradually expanding upwards into the subpatellate stroma; stroma plane to a little concave or convex, dull yellow, slightly punctate with the darker ostiola 1–4 mm. in diameter; asci cylindrical, becoming 16-spored by the separation of each original spore into two subglobose cells; spores becoming smoky-brown, 4×5 mic. in diameter.

On bark.

TYPE LOCALITY: Nicaragua.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: Nicaragua, *C. L. Smith* (type).

The specimen described under this name was included in the Ellis collection under the name *Hypocrea cubispora* Ellis & Holw. from which species it differs in several points the chief of which is that the asci in the present species become 16-spored while those in *Hypocrea cubispora* Ellis & Holw. are 8-spored. There are other gross characters which are also sufficient to mark this species as distinct from the one to which it had been referred by Mr. Ellis.

The young specimens resemble very closely *Helotium citrinum* (Hedw.) Fries in form but the color is not so bright.

3. **Chromocrea ceramica** (Ellis & Everh.)

Hypocrea ceramica Ellis & Everh. N. Am. Pyrenom. 85. 1892.

Stromata appearing first as a speck of white tomentum, with a brick-red spot appearing in the center, finally becoming fleshy, rather thick and entirely brick-red without, and white within,

subpatellate, convex, becoming wrinkled when dry, punctate with the necks of the slightly protruding perithecia finally dusted over with the greenish spores; asci cylindrical, becoming 16-spored by the breaking of each original spore into 2 subglobose cells; spores about 4 mic. in diameter, the lower of each pair a little larger than the upper.

On bark of decaying limb of *Juniperus*.

TYPE LOCALITY: Connecticut.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: Connecticut, *Tharter* (type).

The stromata resemble in form and color *Hypocrea rufa* (Pers.) Fries, but the species is distinguished by its colored spores.

25. PODOSTROMA Karsten, Hedwigia **31**: 294. 1892

Podocrea (Sacc.) Lindau, E. & P. Nat. Pfl. **1**[1]: 364. 1897.

Stromata stipitate, clavate, erect, fleshy, light colored; perithecia immersed in the stroma; asci cylindrical, 16-spored; spores globose or subglobose, hyaline.

Type species: *Podostroma leucopus* Karsten.

The type of the present genus as has been observed by Professor Atkinson is similar in every way to *Podostroma alutacea* (Pers.) Atkinson except that it is reported as occurring on dead insects resembling in this the genus *Cordyceps*. Professor Atkinson is of the opinion that this report may simply indicate an extension of the range of decaying organic matter on which *Podostroma alutacea* may grow and that the two species may be identical.

Stroma clavate, yellow.	1. *P. alutaceum.*
Stroma agariciform, brown.	2. *P. brevipes.*

1. PODOSTROMA ALUTACEUM (Pers.) Atk. Bot. Gaz. **40**: 416. 1905

Sphaeria alutacea Pers. Obs. Myc. **2**: 66. 1797.
Sphaeria clavata Sow. Eng. Fungi, *pl. 159*. 1799.
Cordyceps alutacea Link, Handbk. **4**: 347. 1833.
Hypocrea alutacea Tul. Fung. Carp. **1**: 62 (in note). 1861.
? *Podostroma leucopus* Karsten, Hedwigia **31**: 294. 1892.
Podocrea alutacea Lindau, E. & P. Nat. Pfl. **1**[1]: 364. 1897.

Hypocrea Lloydii Bresadola; Lloyd, Myc. Notes **1**: 87. 1905.

Stroma vertical, consisting of a sterile stem and fertile, clavate or more or less irregular head; stem stout or slender and of variable length, entire plant averaging 2–4 cm. high above the substratum, length below the substratum variable, pale yellow, whitish or tan-colored, fertile head slightly darker; perithecia entirely immersed in the stroma or with their necks slightly protruding; asci cylindrical or slightly clavate, 50–60 × 4 mic., becoming 16-spored by the separation of each original spore into 2 segments; spores subglobose or cuboid, about 4 × 3 mic. the lower of each pair of segments a little longer (*pl. 20, f. 16*).

On wood, decaying organic materials on the ground and (dead insects?).

TYPE LOCALITY: Europe.

DISTRIBUTION: N. York to W. Virginia and N. Carolina.

ILLUSTRATIONS: Atkinson, Bot. Gaz. **40**: *pl. 14–16;* Berkeley, Outl. Brit. Fungi, *pl. 23, f. 6;* E. & P. Nat. Pfl. *f. 243,* F–H; Lloyd, Myc. Notes **1**: *f. 55;* Sow., Engl. Fungi **2**: *pl. 59;* Tul. Fung. Carp. **3**: *pl. 4, f. 1–6.*

SPECIMENS EXAMINED: New Jersey, *Ellis;* New York *Stevens.*

2. **Podostroma brevipes** (Mont.)

Cordyceps brevipes Mont. Syll. 201. 1856.

? *Hypocrea Petersii* Berk. & Curt. Grevillea **4**: 13. 1875.

Hypocrea brevipes Sacc. Michelia **1**: 304. 1878.

Stroma stipitate or substipitate, 1–2 cm. diameter, convex or often irregularly convolute, brown externally, whitish within, papillate with the necks of the slightly protruding perithecia, often dusted over with a yellowish powder, consisting of the exuded spores; stem .5–1 cm. high and 4–5 mm. thick, rugose, darker than the stroma often blackish, expanding above into the agariciform stroma; perithecia covering the upper surface of the stroma, immersed, with the necks slightly protruding, subglobose; asci cylindrical, 75 × 5 mic. becoming 16-spored by the separation of each original spore into 2 subglobose cells with the lower of each pair longer, 4–5 mic. in diameter.

On old wood.

TYPE LOCALITY: S. America.

DISTRIBUTION: Ohio to (Alabama?).

SPECIMENS EXAMINED: Ohio, *Morgan 28, 33.*

From the description *Hypocrea Petersii* Berk. & Curtis seems scarcely to differ. It is described as follows: "Agariciformis; stipite rugoso; peritheciis peripheris; ascis linearibus; sporidiis globosis."

26. STILBOCREA Pat. Bull. Soc. Myc. France **16**: 186. 1900

Stromata consisting of a fleshy hypocreoid base and several erect stilbum-like outgrowths, fleshy, bright colored; perithecia globose or ovate, immersed or with the necks slightly protruding; asci 8-spored; spores hyaline or subhyaline, 1-septate, smooth or rough.

Type species: *Stilbocrea Dussii* Pat.

Distinguished from *Sphaerostilbe* by the immersed perithecia.

Spores 10–12 × 7 mic.	1. *S. hypocreoides.*
Spores 10.5–12.5 × 4.5–5.5 mic.	2. *S. intermedia.*

1. **Stilbocrea hypocreoides** (Kalch. & Cooke)

Sphaerostilbe hypocreoides Kalch. & Cooke, Grevillea **9**: 26. 1880.

Stroma subpatellate or effused, 2–5 mm. in diameter with stilbum-like outgrowths; conidiophores clavate, shortly stipitate; conidia elliptical, 5 × 2 mic.; perithecia immersed in the stroma or with the necks slightly prominent; asci cylindrical, 8-spored; spores elliptical, 1-septate, hyaline, 10–12 × 7 mic., becoming slightly roughened externally.

On naked bark.

TYPE LOCALITY: S. Africa.

DISTRIBUTION: Louisiana.

ILLUSTRATIONS: Grevillea **9**: *pl. 136, f. 25.*

SPECIMENS EXAMINED: Louisiana, *Langlois.*

In the specimens examined it is difficult to find mature asci and spores so that the measurements given above are from the original description.

2. **Stilbocrea intermedia** (Ferd. & Winge)

? *Stilbocrea Dussii* Pat. Bull. Soc. Myc. France **16**: 186. 1900.
Sphaerostilbe intermedia Ferd. & Winge, Bot. Tidssk. **29**: 12. 1908.

Stroma fleshy, patellate or subpatellate, adnate to the sub-

stratum or with the margin free and with several stilbum-like outgrowths consisting of a stalk 1 mm. high and a subglobose head 400–600 mic. in diameter, when dry pale flesh-colored or yellowish-white; perithecia immersed but prominent, orange, ovoid or subglobose, 170–200 mic. in diameter; asci cylindrical, 70–85 × 5.5–7.5 mic., 8-spored; spores 1-seriate, elliptical, slightly unequal-sided, minutely roughened, 1-septate, scarcely constricted at the septum, 10.5–12.5 × 4.5–5.5 mic. (*pl. 20, f. 19–20*).

On bark of trees.

TYPE LOCALITY: Island of St. Thomas, W. Indies.

DISTRIBUTION: Known only from type locality.

ILLUSTRATIONS: Ferd. & Winge, Bot. Tidssk. **29**: *pl. 1, f. 5.*

SPECIMENS EXAMINED: Raukiær, Island of St. Thomas (cotype).

This and the preceding species appear to be very close together.

No specimen of *Stilbocrea Dussii* Pat. has been seen but there seems to be nothing in the description of the present species to distinguish it from the former in which the spores are described as 12 × 5 mic.

27. **Chromocreopsis** gen. nov.

Stromata gregarious or scattered, tubercular and prominent or depressed, from 2 mm. to 1 cm. in diameter, bright colored or dark approaching black, fleshy or subfleshy, surface slightly roughened and dotted with the slightly protruding necks of the perithecia filled with dark colored spores; asci cylindrical to clavate, 8-spored; spores elliptical to subcuboid, simple or septation indistinct, colored brownish.

TYPE SPECIES: *Hypocrea cubispora* Ellis & Holw.

Distinguished from *Chromocrea* by the 8-spored asci.

Stromata tubercular, large, bright colored, yellow. 1. *C. cubispora.*
Stromata depressed, dark colored, brown or blackish.
  Stromata clothed below with hairs. 2. *C. hirsuta.*
  Stromata naked, blackish. 3. *C. bicolor.*

1. **Chromocreopsis cubispora** (Ellis & Holw.)

Hypocrea cubispora Ellis & Holw. Jour. Myc. **1**: 4. 1885.

Stromata scattered, tubercular, margin free, more or less contracted at the base often becoming substipitate, .5–1 cm. in diameter and the same in height, at first very bright lemon-

yellow and appearing pruinose, color often changing in dried specimens, surface scarcely wrinkled when dry, punctate with the slightly protruding necks of the perithecia filled with dark colored spores; asci cylindrical, 8-spored; spores subelliptical or cubical, smoky-brown, with 1–2 oil-drops, 5–7 × 4–5 mic. simple or occasionally obscurely 1-septate (*pl. 20, f. 14–15*).

On decaying wood and bark.

TYPE LOCALITY: Iowa.

DISTRIBUTION: Iowa and Jamaica.

SPECIMENS EXAMINED: Iowa, *Holway* (type); Jamaica, *Murrill 636, 736.*

2. **Chromocreopsis hirsuta** (Ellis & Everh.)

Hypocrea hirsuta Ellis & Everh.; Smith, Bull. Lab. Nat. Hist. St. Univ. Iowa **2**: 397. 1893.

Stromata gregarious or crowded, subhemispherical, coriaceous-carnose, 2–3 mm. in diameter, discoid, obsoletely margined, brown, yellowish-white inside, contracted below, centrally attached, clothed with brown, bristle-like, septate hairs 100–200 × 4 mic., convex or plane above and slightly roughened by the necks of the perithecia; perithecia buried in the stroma, ovate, about 5 mm. high; asci clavate-cylindrical, swollen at the tip, 100 × 10 mic.; spores navicular-oblong or unequally elliptical, brown, 7–8 × 3–3.5 mic.

On bark.

TYPE LOCALITY: Central America.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: Nicaragua, *B. Shimek 80.*

3. **Chromocreopsis bicolor** (Ellis & Everh.)

Hypocrea bicolor Ellis & Everh. Jour. Myc. **4**: 58. 1888.

Stromata gregarious or closely crowded, subpatellate or irregular from mutual pressure, slightly convex, 1–3 mm. in diameter, cinereous, becoming dull brownish-black, white within, margin free, upper surface wrinkled when dry and punctate with the necks of the perithecia; perithecia subglobose, about .5 mm. in diameter; asci cylindrical, 70 × 5 mic., 8-spored; spores 1-seriate, elliptical, with 2 oil-drops, smoky-brown, 5 × 2–3 mic.

On decaying wood.

TYPE LOCALITY: Manhattan, Kansas.

DISTRIBUTION: Kansas and Missouri to Louisiana and Central America.

SPECIMENS EXAMINED: Kansas, *Kellerman & Swingle* (type); Louisiana, *Langlois;* Missouri (no name); Nicaragua, Central America, *Shimek.*

DOUBTFUL SPECIES

Hypocrea aurantio-cervina Ellis & Everh. Bull. Torrey Club **24**: 458. 1897.

This appears to be a *Hypoxylon.*

Hypocrea-viridi-rufa Berk. & Rav.; Berk. Grevillea **4**: 14. 1875.

A note from Kew indicates that this is probably a *Hypoxylon.*

28. BYSSONECTRIA Karst. Medd. Soc. Fauna Fl. Fenn. **6**: 6. 1881

Perithecia seated in a scant, cottony stroma, subglobose or ovoid, vertically collapsing; asci cylindrical, 8-spored; spores 1-seriate, often overlapping, elliptical, simple or occasionally pseudoseptate.

TYPE SPECIES: *Byssonectria abducens* Karst.

This genus is intermediate between *Nectria* and *Hypomyces.* The perithecia and spores are very similar to those of *Nectria* while the trace of a cottony stroma suggests *Hypomyces.*

Stroma white; perithecia violaceous.	1. *B. violacea.*
Stroma yellow; perithecia yellowish-brown.	2. *B. chrysocoma.*

1. **Byssonectria violacea** (Schmidt)

Sphaeria violacea Schmidt; Fries, Syst. Myc. **2**: 441. 1822.

Hypomyces violaceus (Schmidt) Tul. Ann. Sci. Nat. IV. **13**: 14. 1860.

Stroma consisting of a thin, white mycelial growth overspreading the substratum; perithecia thickly scattered, globose or subglobose, smooth or only minutely roughened, vertically collapsing, violaceous; asci cylindrical, 8-spored; spores 1-seriate or with the ends slightly overlapping, elliptical, simple, granular within, 6–7 × 2–3 mic.

On *Fuligo septica.*

TYPE LOCALITY: Europe.

DISTRIBUTION: Maine.

SPECIMENS EXAMINED: Maine, *Harvey.*

The material here referred to this name corresponds well with the description of the species named above except that the spores are not septate, although they sometimes have a pseudo-septate appearance.

2. BYSSONECTRIA CHRYSOCOMA Cooke & Hark. Grevillea **12**: 101. 1884

Stroma effused, byssoid, golden-yellow; perithecia minute, gregarious, obovate, yellowish-brown, partially immersed in the stroma; asci clavate, 8-spored; spores 2-seriate, narrowly elliptical, simple or doubtfully septate, 10–13 × 3 mic.

On wood of *Eucalyptus*.

TYPE LOCALITY: California.

DISTRIBUTION: Known only from type locality.

No specimen of this species has been seen, however in notes sent from Kew the spore measurements are given and the species seems to have good characters.

DOUBTFUL SPECIES

Byssonectria roscella Cooke & Hark.; Cooke, Grevillea **12**: 101. 1884. Described from imperfect material.

Byssonectria fimeti (Cooke) Sacc. Syll Fung. **2**: 457. 1883. The species was described from material collected by Ravenel. This material has been examined by the writer and the only ascomycete found was a discomycete. Whether this was mistaken for a *Nectria* it is difficult to state.

Hypomyces exiguus Pat. Bull. Soc. Myc. France **18**: 180. 1902.

Stroma byssoid, white; perithecia globose, extruded, scattered, small, 130–160 mic. in diameter, white or slightly yellowish; asci numerous, without paraphyses, cylindrical, 30–35 × 3–4 mic., 8-spored; spores 1-seriate, hyaline, ovoid, smooth, simple, small, 3–4 × 2 mic.

On the fructification of *Stemonitis*.

According to the author of the species this is closely related to *H. violaceus* (Schmidt) Tul. No specimen has been seen.

29. PECKIELLA Sacc. Syll. Fung. **9**: 944. 1891

Peckiella Sacc. (as subgenus) Syll. Fung. **2**: 472. 1883.

Stroma consisting of an effused cottony subiculum, usually parasitic on other fungi; perithecia immersed or partially im-

mersed in the subiculum; asci cylindrical or clavate, 8-spored; spores fusiform, simple, smooth or externally roughened.

Type species: *Sphaeria viridis* Albert. & Schw.

Distinguished from *Hypomyces* by the simple spores.

Stroma dirty greenish.	1. *P. viridis.*
Stroma not greenish.	
Spores comparatively small, 15–20 mic. long.	
Stroma lemon-yellow.	2. *P. camphorati.*
Stroma white, becoming pallid or latericeous.	3. *P. lateritia.*
Spores comparatively large, 30 mic. or more long.	
Spores broad fusiform, rough, apiculate.	
Stroma dull orange; on *Cantharellus.*	4. *P. transformans.*
Stroma pallid.	5. *P. Banningiae.*
Spores narrow fusiform, smooth, non-apiculate.	6. *P. hymenii.*

1. PECKIELLA VIRIDIS (Albert. & Schw.) Sacc. Syll. Fung. **9**: 944. 1891

Sphaeria viridis Albert. & Schw. Conspect. Fung. 8. 1805.

Hypomyces viridis Berk. & Broome, Ann. Mag. Nat. Hist. **15**: 22. 1865.

Stroma effused, covering the hymenium and stem of the host, dirty greenish or greenish-black; perithecia thickly gregarious and immersed or partially immersed in the subiculum; asci cylindrical or slightly clavate, 8-spored, 175–180 × 5–6 mic.; spores 1-seriate or partially 2-seriate above, fusiform with a long apiculus at each end, 25–35 × 5 mic. becoming delicately verrucose, simple but occasionally appearing obscurely and irregularly septate (*pl. 21, f. 1*).

On the hymenium and stem of agarics, *Lactaria* and *Russula.*

TYPE LOCALITY: Europe.

DISTRIBUTION: New England to N. Carolina.

ILLUSTRATIONS: Albert. & Schw. Conspect. Fung. *pl. 6, f. 8;* Phill. & Plow. Grevillea **8**: *pl. 130, f. 1;* Plow. Grevillea **11**: *pl. 152, f. 2.*

SPECIMENS EXAMINED: Pennsylvania, *Everhart;* (Vermont?), *Burlingham.*

The species is distinguished externally by its dark greenish color and internally by the very large, rough, simple spores.

2. **Peckiella camphorati** (Peck)

Hypomyces camphorati Peck, Bull. N. Y. State Mus. **105**: 23. 1906.

Stroma consisting of a thin effused subiculum overspreading the hymenium of the host and obliterating the gills, forming an even layer, bright lemon-yellow sometimes slightly fading; perithecia numerous, small, immersed in the subiculum or with the ostiola slightly protruding, darker than the subiculum, pale brownish; asci cylindrical, 8-spored; spores 1-seriate, fusiform with a short apiculus at each end, occasionally blunt at both ends, smooth or very minutely rough, 15–20 × 4 mic., simple oozing out and forming a white powder over the surface of the stroma (*pl. 21, f. 6*).

On the hymenium of *Lactaria camphorata.*

TYPE LOCALITY: New York.

DISTRIBUTION: New York.

SPECIMENS EXAMINED: New York, *Peck* (type), *Murrill 2678.*

The spores of this species are similar in size and general appearance to those of *Peckiella lateritia* but the species is easily distinguished by its bright lemon-yellow stroma.

3. PECKIELLA LATERITIA (Fries) Maire, Ann. Myc. **4**: 331. 1906

Sphaeria lateritia Fries; Kunze, Myc. Heft. **2**: 42. 1823.

Hypomyces lateritius Tul. Ann. Sci. Nat. IV. **13**: 11. 1860.

Hypocrea lateritia Fries, Summa Veg. Scand. 383. 1849.

Hypomyces Vuilleminianus Maire, Bull. Herb. Boissier **7**: 138. 1899.

Hypomyces volemi Peck, Bull. Torrey Club **27**: 20. 1900.

Peckiella Vuilleminiana Sacc. & Sydow, Syll. Fung. **16**: 560. 1902.

Peckiella hymenioides Peck, Bull. Torrey Club **34**: 102. 1907.

Stroma effused, more or less cottony, forming an even layer on the hymenium and more rarely on the stem of the host, entirely obliterating the gills, at first white becoming pale yellow or yellowish-brown; perithecia thickly scattered, immersed or with the necks of the ostiola more or less prominent, darker than the subiculum, yellowish or brownish, ovate; asci cylindrical, 8-spored, of variable length often attaining a length of 200 mic.; spores fusiform, usually with a distinct apiculus at each end, unequal sided, at first smooth, becoming delicately verrucose,

hyaline or subhyaline, granular within, nucleate or pseudoseptate, 15–25 × 4–5 mic. (mostly 15–20 × 4–5 mic.) (*pl. 21, f. 5*).

On different species of gill fungi, especially *Lactariae*.

TYPE LOCALITY: Europe.

DISTRIBUTION: Vermont to Alabama.

ILLUSTRATIONS: Tul. Fung. Carp. **2**: *pl. 30, f. 5*.

SPECIMENS EXAMINED: Alabama, *Earle;* Connecticut, *Earle, Thaxter;* N. Jersey, *Ellis;* Pennsylvania, *Everhart;* Vermont, *Burlingham*.

While this species is usually described as having 1-septate spores, there seems to be much difference of opinion on this point. Maire* states that he had described *Hypomyces Vuilleminianus* believing it to differ from *Hypomyces lateritius* in the absence of the septum of the spores. Having later collected the species commonly and finding the spores to be always non-septate, he began to suspect that the description of *Hypomyces lateritius* by Tulasne† was incorrect. This suspicion was later confirmed by the examination of the original specimen sent from the Museum of Paris. He therefore reunites *Hypomyces Vuilleminianus* Maire and *Hypomyces lateritius* (Fries) Tulasne and states that the spores are verrucose and non-septate. The difference of opinion as to the presence of the septum in the spores of this species seems to be due to the fact that the spore contents often separates toward either end giving a septate appearance.

Hypomyces volemi was described by Dr. Peck on *Lactaria volema* and the spores indicated as fusiform, 12–15 × 4 mic., and commonly 2-nucleate. I have examined the type of this species and can discover no character on which to separate it.

Peckiella hymenioides was described by the same author on *Lactaria uvida* and the spores described as simple, subfusiform, pointed or acute at each end, 12–15 × 4–5 mic. Cotype material of this species in good condition has been studied and I find that it conforms in every detail with European material which has been distributed under the name of *Hypomyces lateritius* (Fries) Tul.

Since making the above notes I have been permitted to examine

* Ann. Myc. **4**: 331. 1906.

† Fung. Carp. **3**: 63. 1865.

a specimen of *Sphaeria lateritia* Fries from the herbarium of Fries and this examination has confirmed the observations of Maire that the spores of this species are simple.

4. PECKIELLA TRANSFORMANS (Peck) Sacc. Syll. Fung. **9**: 945. 1891

? *Hypomyces insignis* Berk. & Curtis; Berk. Jour. Linn. Soc. **9**: 424. 1867.

Hypomyces transformans Peck, Ann. Rep. N. Y. State Mus. **29**: 57. 1878.

Subiculum effused, variable in color, dull orange, ochraceous or brick-red; perithecia numerous, thickly scattered, subglobose, partially buried in the subiculum, with a prominent ostiolum, amber or orange; asci cylindrical, 8-spored; spores fusiform with an apiculus at each end, becoming somewhat rough, simple or with the endochrome obscurely divided, hyaline, 32–37 mic. long (*pl. 21, f. 4*).

On *Cantharellus cibarius,* which it transforms into an irregular mass.

TYPE LOCALITY: Sandlake, N. York.

DISTRIBUTION: New York to Massachusetts and Pennsylvania.

SPECIMENS EXAMINED: New York, *Peck* (cotype); Massachusetts, *Harkness;* Pennsylvania, *Everhart.*

The species quite closely resembles *Hypomyces Lactifluorum* (Schw.) Tul.

5. PECKIELLA BANNINGIAE (Peck) Sacc. Syll. Fung. **9**: 945. 1891

Hypomyces Banningii Peck, Bot. Gaz. **4**: 139. 1879.

Stroma white, then sordid, transforming the hymenium of the host; perithecia crowded, ovate, with a papilliform ostiolum, pale amber or dull yellow; asci cylindrical, slender, 8-spored; spores 1-seriate, fusiform, hyaline, white in mass, 30–35 × 5–6 mic. becoming delicately roughened externally, with a distinct apiculus at each end, simple (*pl. 21, f. 2*).

On decaying fungi apparently some *Lactaria.*

TYPE LOCALITY: Baltimore, Maryland.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: Baltimore, *Miss Banning* (type).

Specimens from Pennsylvania referred to this name by Mr. Ellis are *Peckiella hymenii* Peck.

6. PECKIELLA HYMENII Peck, Bull. N. Y. State Mus. **116**: 28. 1907

Subiculum white, overrunning the hymenium of the host and obliterating the gills, sometimes interrupted, becoming yellowish with age; perithecia minute, ovate, immersed with the ostiola protruding, numerous, pale yellow, becoming darker with age; asci cylindrical, 8-spored; spores 1-seriate with ends overlapping, fusiform but not apiculate, straight or a little curved or double curved, simple, slender, 35–40 × 5 mic., oozing from the perithecia forming minute whitish masses upon them (*pl. 21, f. 4*).

On the hymenium of species of *Lactaria*.

TYPE LOCALITY: New York.

DISTRIBUTION: New York to Pennsylvania.

SPECIMENS EXAMINED: New York, *Peck* (type); Pennsylvania, *Everhart*.

The species is quite distinct in the slender, fusiform, non-apiculate spores.

30. HYPOMYCES (Fries) Tul. Ann. Sci. Nat. IV. **13**: 11. 1860

Hypomyces Fries, Syst. Orbis Veg. 105 (as possible genus). 1825.

Nectria Fries, Syst. Orbis Veg. 105 (as possible genus) in part. 1825.

Clintoniella (Sacc.) Rehm, Hedwigia **39**: 223. 1900.

Stroma consisting of an effused, cottony subiculum often of considerable extent (rarely subpatellate and subfleshy), occurring as a parasite on fleshy fungi or more rarely on old wood, rotten leaf mould and other substrata where there is no trace of other fungi; conidial phase variable, represented by species of *Sepedonium, Verticillium* (*Asterophora?*), etc.; perithecia numerous usually thickly scattered and immersed in the subiculum, rarely subsuperficial or with the necks more or less protruding; asci cylindrical, 8-spored; spores fusoid or fusiform, usually with an apiculus at each end or ends blunt, 1-septate, hyaline, smooth or rough.

TYPE SPECIES: *Sphaeria Lactifluorum* Schw.

Stromata orange, purple or rose-colored.
Some shade of orange, occasionally purple with age.
Entirely covering and transforming the hymenium of *Lactariae;* perithecia entirely immersed. 1. *H. Lactifluorum.*
Forming interrupted patches on wood and fungi of various kinds.
Stromata bright orange, fading with age; perithecia entirely immersed, occurring on wood, decaying leaves, etc. 2. *H. apiculatus.*
Stromata dull orange or rust-colored, cottony; perithecia subsuperficial, on fungi of various kinds. 3. *H. aurantius.*
Stroma delicately rose-colored, on wood, etc. 4. *H. rosellus.*
Stromata bright lemon-yellow, amber or pallid.
Stroma bright lemon-yellow.
Stroma yellow, cottony; perithecia reddish, immersed, on *Boleti.* 5. *H. chrysospermus.*
Stroma and perithecia both lemon-yellow; perithecia subsuperficial. 6. *H. aureo-nitens.*
Stroma dull yellow or pallid.
Spores comparatively small, not over 20 mic. long.
Spores unequally septate, rough. 7. *H. hyalinus.*
Spores equally septate, smooth.
On *Coriolus versicolor;* perithecia amber. 8. *H. polyporinus.*
On wood and fungi of various kinds; spores showing a tendency to separate at the septum.
Spores large, 18–20 mic. long; stroma subpatellate. 9. *H. citrinellus.*
Spores small, 10 mic. long; stroma effused, papery. 10. *H. papyraceus.*
Spores very large, 35 mic. long, rough. 11 *H. macrosporus.*

1. HYPOMYCES LACTIFLUORUM (Schw.) Tul. Ann. Sci. Nat. IV. **13**: 11. 1860

Sphaeria Lactifluorum Schw. Schr. Nat. Ges. Leipzig **1**: 31. 1822.

Hypomyces purpureus Peck, Bull. Torrey Club **25**: 327. 1898.

Subiculum thin, effused, covering the hymenium and stem of the host and entirely obliterating the gills, bright orange, color changing to bright purple as the host decays; perithecia thickly scattered, immersed or with the necks slightly protruding, a little darker than the subiculum; asci very long, cylindrical, 8-

spored; spores 1-seriate with the ends overlapping, fusiform with an apiculus at each end, for the most part slightly curved or unequal sided, septate, with the septum in the center, hyaline and strongly roughened at maturity, 35–40 × 7–8 mic., oozing from the perithecia and forming a white powder over the surface of the stroma (*pl. 20, f. 3–5, and pl. 21, f. 7*).

Parasitic on species of *Lactaria*.

TYPE LOCALITY: N. Carolina.

DISTRIBUTION: Maine to N. Dakota and Alabama.

ILLUSTRATIONS: Ellis & Everhart, N. Am. Pyrenom. *pl. 11, f. 12–14;* Bull. N. Y. State Mus. 105: *pl. 103.*

EXSICCATI: Bartholomew; Ellis & Everhart, Fungi Columbiani *1734;* Ellis, N. Am. Fungi *467, 643;* Shear, N. Y. Fungi *89;* Wilson & Seaver Ascom. and Lower Fungi *34.* Other Specimens Examined: Alabama, *Earle;* Maine, *Murrill, 1854, 2040;* N. York, *Peck* (type of *H. purpureus*); N. Dakota, *Seaver;* N. Jersey, *Ellis;* Ohio, *Kelsey;* Pennsylvania, *Haines, Everhart & Wood;* S. Carolina, *Ravenel, Schweinitz* (type); Tennessee, *Murrill.*

Easily distinguished by its bright orange subiculum which entirely discolors the host. The change of color from orange to purple is a noteworthy feature.

2. **Hypomyces apiculatus** (Peck)

Hypocrea apiculata Peck, Ann. Rep. N. Y. State Mus. **29**: 57. 1878.

? *Hypomyces xylophilus* Peck, Bull. Torrey Club **11**: 28. 1884.

Clintoniella apiculata Sacc. Syll. Fung. **16**: 588. 1902.

Subiculum effused, soft, subfleshy, occurring in irregular patches, at first bright orange with the margin sterile and lighter, color very variable in dried specimens fading to pale orange, dull yellow and finally dirty whitish especially when exposed to the light; perithecia thickly scattered, immersed with the necks protruding, darker than the subiculum; asci cylindrical, 8-spored; spores 1-seriate with the ends overlapping, fusiform with an apiculus at each end, usually a little curved, 1-septate and slightly constricted, hyaline, 25–35 × 7–8 mic. becoming a little rough at maturity (*pl. 21, f. 8*).

On decaying leaves, wood, etc.

TYPE LOCALITY: Catskill Mts., New York.

DISTRIBUTION: New York to Virginia.

SPECIMENS EXAMINED: New York, *Peck* (cotype), *Seaver* (various collections); Virginia, *Murrill, 436, 437, 438, 439.*

The present species was not originally described as a *Hypomyces* since the plants do not occur on other fungi as is usually the case. Dr. Peck (l. c.) states: "The spores of *Hypocrea apiculata* resemble those of this (*Hypomyces transformans*) and other species of *Hypomyces* but the plant is not parasitic on fungi an essential character in the genus *Hypomyces* as at present defined." After examination of specimens collected by the writer and determined by Dr. Peck it was concluded that this species was a typical *Hypomyces* and a note from the same man later sustained me in this conclusion.

The genus *Clintoniella* (Sacc.) Rehm was based on this species and was distinguished from *Hypocrea* by the fusiform spores. The latter genus is therefore not well founded.

A specimen of *Hypomyces xylophilus* Peck, collected in Ohio by Morgan and which is apparently cotype has been studied. This appears to be a faded and rather poor specimen of the above species, which often occurs on wood and rubbish of various kinds.

3. HYPOMYCES AURANTIUS (Pers.) Tul. Ann. Sci. Nat. IV. **13**: 12. 1860

Sphaeria aurantia Pers. Ic. et Descr. **2**: 45. 1800.

Nectria aurantia Fries, Summa Veg. Scand. 388. 1849.

? *Diplocladium minor* Bon. Handbk. All. Myk. 98. 1851.

Subiculum effused, at first whitish, becoming orange or rust-colored, often covering an area of 5–8 cm. or in smaller, interrupted patches; perithecia thickly gregarious or crowded, orange, darker than the subiculum; subconical, with the ostiola strongly protruding, occasionally with the subiculum almost wanting in weathered specimens; asci cylindrical, 8-spored, with the spores slightly overlapping; spores fusiform, usually a little curved, with a medial septum and a short apiculus at each end, becoming strongly verrucose at maturity (*pl. 21, f. 9*).

On decaying fungi of various kinds.

TYPE LOCALITY: Europe.

DISTRIBUTION: Connecticut to Colorado and Cuba.

ILLUSTRATIONS: Pers. Ic. et Descr. **2**: *pl. 11, f. 4–5.*

SPECIMENS EXAMINED: Colorado, *Cockerell;* Connecticut, *Thaxter;* Cuba, *Earle* and *Murrill 500;* Iowa, *Seaver;* N. Dakota, *Seaver.*

4. HYPOMYCES ROSELLUS (Albert. & Schw.) Tul. Ann. Sci. Nat. IV. **13**: 12. 1860

? *Sphaeria rosea* Pers. Syn. Fung. 18. 1801.

Sphaeria rosella Albert. & Schw. Conspect. Fung. 35. 1805.

Nectria Albertini Berk. & Broome, Ann. Mag. Nat. Hist. **7**: 14. 1861.

Nectria rosella Fries, Summa Veg. Scand. 388. 1849.

Hypomyces roseus Fuckel, Symb. Myc. 182. 1869.

Conidial phase (species of *Trichothecium* and *Dactylium*) forming an effused subiculum often covering an area of 3–8 cm., cottony, at first whitish becoming rose-colored, lighter near the sterile margin; conidia elliptical, hyaline, becoming 1–3-septate; perithecia thickly scattered, darker than the subiculum, nearly blood-red, partially immersed in the subiculum, with the protruding ostiolum acute or more or less obtuse, often collapsing; asci cylindrical, 8-spored; spores 1-seriate with the ends overlapping in the ascus, with an apiculus at each end, 1-septate, septum medial, hyaline becoming slightly rough at maturity, 20–30 × 5 mic. (*pl. 21, f. 10*).

On fungi, old wood and rubbish probably growing on the remains of decaying fleshy fungi.

TYPE LOCALITY: Germany.

DISTRIBUTION: Delaware to N. Dakota, Florida, Louisiana and the W. Indies.

ILLUSTRATIONS: Albert. & Schw. Conspect. Fung. *pl. 7, f. 3;* Tul. Fung. Carp. **2**: *pl. 30, f. 6–9.*

SPECIMENS EXAMINED: Delaware, *Commons;* Florida, *Martin;* Louisiana, *Langlois 2176;* Minnesota, *Holway;* N. Dakota, *Seaver;* Porto Rico, *Goll.*

The species is very distinct in its rose-colored subiculum and fusiform spores.

5. HYPOMYCES CHRYSOSPERMUS (Bull.) Tul. Ann. Sci. Nat. IV. **13**: 16. 1855

Reticularia chrysosperma Bull. Herb. France *pl. 476, f. 4.* 1789.
Mucor chrysospermus Bull. Hist. Champ. **1**: 99. 1809.
Uredo mycophila Pers. Obs. Myc. 16. 1796.
Sepedonium chrysospermum Fries, Syst. Myc. **3**: 438. 1829.
Hypomyces boletinus Peck, Bull. N. Y. State Mus. **75**: 15. 1905.

Conidial phase consisting of a golden or lemon-yellow powdery mass which covers the substratum often for several cm.; conidia globose, golden-yellow, beautifully but delicately echinulate, 15–18 mic. in diameter; perithecia gregarious or thickly crowded, nestling in the yellow subiculum, reddish or reddish-brown; asci cylindrical, 8-spored; spores 1-seriate with the ends overlapping in the ascus, fusiform, mostly curved, and becoming when mature slightly rough, 1-septate, with the septum near one end, dividing the spore into two unequal cells with the short cell toward the base, 12–15 × 4 mic. (*pl. 21, f. 16*).

On species of *Boletus*.

TYPE LOCALITY: France.

DISTRIBUTION: New York to Connecticut and Virginia.

ILLUSTRATIONS: Bull. Herb. France *pl. 476, f. 4;* Tul. Fung. Carp. **3**: *pl. 8, f. 1–13.*

SPECIMENS EXAMINED: Connecticut, *Burlingham;* New York, *Peck* (type of *H. boletinus*), *Seaver, Galloway;* Virginia, *Murrill.*

Species very distinct with its bright yellow conidia and dark reddish perithecia. The spores in American forms examined are smaller than usually indicated for European specimens, however, as the spores are quite variable in size and other characters conform well it is likely that the American and European specimens are identical.

6. HYPOMYCES AUREO-NITENS Tul. Fung. Carp. **3**: 64. 1865

Stroma effused, thin, bright golden or lemon-yellow overspreading the host often for a distance of 2 cm.; perithecia seated in the stroma, very much exserted or subsuperficial, thickly gregarious, often crowded, darker in color than the subiculum, ovate; asci cylindrical, 8-spored; spores 1-seriate with the ends overlapping, fusiform with the ends sharply pointed, 1-septate, with the septum medial, slightly constricted, 15–18 × 4 mic. (*pl. 21, f. 19*).

On old fungi, *Polyporus, Stereum.*

TYPE LOCALITY: Europe.

DISTRIBUTION: Ohio.

ILLUSTRATIONS: Plowright, Grevillea **11**: *pl. 156.*

SPECIMENS EXAMINED: Ohio, *Morgan 19, 27, 37.* Also specimens from the herbarium of *Plowright.*

The spores are a little larger than indicated for the European specimens but otherwise they conform well.

7. HYPOMYCES HYALINUS (Schw.) Tul. Ann. Sci. Nat. IV. **13**: 11. 1860

Sphaeria hyalina Schw. Schr. Nat. Ges. Leipzig **1**: 30. 1822.

? *Hypomyces Van-Bruntianus* Gerard, Bull. Torrey Club **4**: 64. 1873.

Hypomyces inaequalis Peck, Bull. Torrey Club **25**: 328. 1898.

Peckiella hyalina Sacc. Syll. Fung. **9**: 945. 1891.

Subiculum effused, almost entirely covering the host which is often undeveloped, white, pallid or with a tinge of pink or brownish; perithecia thickly scattered, immersed or partially immersed in the subiculum or with the necks slightly protruding, darker than the subiculum, brownish or reddish-brown; asci cylindrical, 8-spored; spores 1-seriate with the ends overlapping, usually with a minute apiculus above, or occasionally obtuse, gradually tapering below, often slightly constricted and septate near the base, at first smooth, becoming strongly verrucose, septation less distinct in mature spores on account of the wart-like markings on the surface, constriction usually evident, 15–20 × 5–7 mic., hyaline or very faintly yellowish (*pl. 21, f. 12*).

Type on *Russula foetens,* also reported on various other agarics which are usually deformed and not easily determined.

TYPE LOCALITY: N. Carolina.

DISTRIBUTION: N. Carolina to Maine.

SPECIMENS EXAMINED: Maine, *Fox* (type of *H. inaequalis*); Massachusetts, *Sturgis;* N. Carolina, *Schweinitz* (type), *Murrill & House.*

The species is well distinguished by the spore characters. The above description was drawn from the type in the Schweinitz collection at Philadelphia.

In the herbarium of the N. Y. Botanical Garden is a letter

dated Sept. 5, 1893, and addressed to Mr. J. B. Ellis by Dr. W. C. Sturgis which reads as follows: "I enclose a specimen of what I take to be *Hypomyces hyalinus* Schw. on a species of *Agaricus* collected at Manchester, Mass. There would be no doubt about it were it not for the peculiarity in the spores. When mature they seem to be unequally uniseptate as in the genus *Stigmatea*. I thought I could distinguish the septum but it may be merely due to the absence of the warted surface plainly visible on the greater part of the spore surface. I would like your opinion on it."

This peculiarity I had already noticed and described in the spores of the type of *Hypomyces hyalinus* (Schw.) Tul., before finding the above note by Dr. Sturgis. I later compared the spores of the specimen collected by Sturgis with Schweinitz's type and find them identical.

Dr. C. H. Peck later described *Hypomyces inaequalis* and in a note stated: "The species is peculiar in having the septum of the spores near the base as in the spores of *Plowrightia morbosa*. This divides the spore into two unequal parts and suggests the specific name." In the type of this latter species the spores are not quite so strongly verrucose but show a tendency to become rough and there is no doubt of its identity.

The spores of *Hypomyces Van-Bruntianus* Gerard were described as follows: "Spores hyaline, oblong, shortly apiculate at the broad end and obtusish at the other, .0006 × .0002'" (15 × 5 mic.). I have examined a specimen of this species from the herbarium of Gerard but was unable to find spores in good condition for study. The general description of the spores indicate that it is a synonym of the above.

8. HYPOMYCES POLYPORINUS Peck, Bull. Buffalo Soc. Nat. Sci. 1: 71. 1874

Peckiella polyporina Sacc. Syll. Fung. 9: 945. 1891.

Subiculum effused, covering the hymenium of the host, entirely obliterating the pores, whitish or pale yellowish; perithecia numerous, thickly scattered or closely crowded, partially immersed in the subiculum, amber; asci cylindrical, 8-spored; spores 1-seriate with the ends overlapping, fusiform, mostly a little curved, smooth, 1-septate, 15–20 × 4–4.5 mic. (*pl. 21, f. 17*).

On the hymenium of *Coriolus versicolor.*

TYPE LOCALITY: New York.

DISTRIBUTION: N. York to N. Jersey and N. Dakota.

EXSICCATI: Ellis & Everh., N. Am. Fungi *1946;* N. Dakota Fungi *8;* Wilson & Seaver, Ascom. & Lower Fungi *35.* Other specimens examined: Canada, *Macoun;* N. Dakota, *Seaver* (various collections); N. York, *Peck* (type); N. Jersey, *Ellis.*

9. **Hypomyces citrinellus** (Ellis)

Hypocrea citrinella Ellis, Bull. Torrey Club **6**: 108. 1876.

Stromata subpatellate, gregarious or scattered, small, 1–2 mm. in diameter, fleshy or subfleshy, pale lemon-yellow, upper surface punctate with the protruding necks of the perithecia, becoming wrinkled in drying; asci cylindrical, 8-spored; spores 1-seriate, strongly overlapping, fusiform with the ends acute, 1-septate, strongly constricted at the septum, 18–20 × 4 mic., showing a tendency to become disjuncted at the septum, especially when removed from the ascus (*pl. 21, f. 14*).

On dead bark of *Vaccinium.*

TYPE LOCALITY: N. Jersey.

DISTRIBUTION: Known only from type locality.

ILLUSTRATIONS: Ellis & Everh. N. Am. Pyrenom. *pl. 11, f. 4, 5.*

SPECIMENS EXAMINED: N. Jersey, *Ellis* (type).

The stromata of this species are subpatellate and resemble very closely those of some of the common species of *Hypocrea.* This together with the fact that the spores sometimes break apart at the septum doubtless explains the reason for the species having been placed in the genus *Hypocrea* by Mr. Ellis. The spores are exactly those of a *Hypomyces* and since the stromata in this genus vary from cottony to fleshy we can scarcely do otherwise than to include the species with this genus. Mr. Ellis in a later description states:* "In the original description, the true character of the sporidia was overlooked, the specimens first found being rather old and the cells of the sporidia separated." He does not however remove it from the genus in which it was originally placed.

* Ellis & Everh. N. Am. Pyrenom. 87. 1892.

The occasional breaking apart of the two cells of the spores is also shown by another species, *Hypocrea papyracea* Ellis & Holw. but in the latter species the stroma is papery and effused. The tendency of the spores to separate at the septum seems to suggest a *Hypocrea* while the form of the spores is that of a *Hypomyces*, and the stromatic characters of the two species partakes as much of the one genus as the other. To me it seems best to place both species in the genus *Hypomyces* since the form of the spores would suggest a close relationship with the other species of this genus.

10. **Hypomyces papyraceus** (Ellis & Holw.)

Hypocrea papyracea Ellis & Holw. Jour. Myc. **2**: 66. 1886.

Stroma effused, consisting of a thin, membranaceous mycelial growth easily separable from the substratum, of a papery consistency, very pale yellow or whitish, 2–3 cm. in diameter; perithecia very minute, about 150 mic. in diameter, subsuperficial, reddish and appearing like minute specks on the surface of the stroma; asci cylindrical, 8-spored; spores 1-seriate with the ends overlapping, fusiform, 1-septate, strongly constricted at the septum and often disjuncted and the cells easily separating, especially when removed from the ascus, 10 × 2–3 mic. (*pl. 21, f. 15*).

On decaying wood and fungi.

TYPE LOCALITY: Iowa.

DISTRIBUTION: Iowa to Ohio.

SPECIMENS EXAMINED: Iowa, *Holway* (type); Ohio, *Morgan* (two collections).

A specimen received from Mr. Morgan of Ohio before his death as *Hypomyces* sp. nov. conforms well with the type of the above species. The species is well characterized by the paper-like consistence of the stroma as well as by the very small perithecia and the tendency exhibited by the spores to separate at the septum.

Hypomyces macrosporus sp. nov.

Stroma consisting of an effused subiculum entirely covering the hymenium of the host and obliterating the gills, pallid or pale ochraceous (in dried specimens), covered over with a pale yellow powder (spores); perithecia numerous and thickly scattered,

entirely immersed or with the ostiola slightly protruding, darker than the stroma; asci cylindrical, 8-spored; spores 1-seriate, strongly overlapping, fusiform, with an apiculus at each end, 1-septate, not constricted or constriction so slight as to be scarcely noticeable, strongly verrucose, hyaline or very pale yellowish, 35–40 × 8–9 mic.

On some gill fungus.

TYPE LOCALITY: Alabama.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: Alabama, *Earle & Baker*.

From various descriptions this was at first thought to be *Hypomyces ochraceus* (Pers.) Tul. A note from Leiden however states that there is no material of *Sphaeria ochracea* Pers. to be found in Persoon's herbarium. This species was originally reported as terrestrial while our specimens are parasitic on gill fungi. In the absence of type material it is impossible to state what Persoon's specimens really were but the descriptions usually represent them as having large, smooth, strongly constricted spores. The spores of the present species conform well in size but differ in being unconstricted and strongly verrucose. This together with its parasitic habits would seem to distinguish our species from Persoon's.

DOUBTFUL SPECIES

Hypomyces sepulcralis Pat. Bull. Soc. Myc. France **18**: 179. 1902.

Stroma crustaceous, irregular, white to pale ochraceous, thin; perithecia subglobose, partially immersed, brown, closely gregarious, ostiola conical, protruding; asci cylindrical, narrow, 120–150 × 5–6 mic., 8-spored; spores 1-seriate, fusoid, hyaline, not appendiculate, smooth or a little rough, 1-septate, and not constricted at the septum, 10–14 × 4–5 mic.

On the ground in a cemetery.

According to the author of the species similar to *H. terrestris* Plow. & Boud.

Hypocrea viridans Berk. & Curtis; Berk. Jour. Linn. Soc. **10**: 376. 1869.

Scarcely a line across, composed of thick cylindrical, branched, gelatinous threads; spores 2-seriate, fusiform, narrow, .00057 inch long.

On leaves of *Gesneria*. No specimen seen.

Hypomyces asterophorus Tul. Fung. Carp. **3**: 55. 1865. Perfect fruit not known from N. America.

Sphaeria boleticola Schw. Trans. Am. Phil. Soc. II. **4**: 210. 1832. No specimen could be found in the Schweinitz collection at Philadelphia.

Hypomyces ochraceus (Pers.) Tul. Ann. Sci. Nat. IV. **13**: 12. The specimens of this species reported from N. America do not conform with the original description. No specimen of the type could be found at Leiden.

Hypomyces apiosporus Cooke, Grevillea **12**: 80. 1884. No specimen at Kew. Description suggests *Hypomyces hyalinus* (Schw.) Tul.

Hypomyces tegillum Berk. & Curtis, Grevillea **4**: 15. 1875. Described from immature material.

31. HYPOCREOPSIS Karsten, Myc. Fenn. **2**: 251. 1873

Dozya Karsten, Myc. Fenn. **2**: 28. 1873 (homonym).

Stroma tubercular, fleshy, effused, lobate or stellate, superficial; perithecia immersed; asci 8-spored; spores elliptical, usually 1-septate, hyaline, cells not separating.

TYPE SPECIES: *Sphaeria riccioidia* Bolton.

Distinguished from *Hypocrea* by the 8-spored asci.

Stroma stellately lobed or branched.	1. *H. lichenoides.*
Stroma not stellately branched or lobed.	
Stroma effused, on *Tremella*.	2. *H. tremellicola.*
Stroma patellate, on dead wood.	3. *H. consimilis.*

1. **Hypocreopsis lichenoides** (Tode)

Acrospermum lichenoides Tode, Fung. Meckl. **1**: 9. 1790.
Sphaeria riccioidia Bolton, Fungi Halifax **4**: 182. 1791.
Sphaeria parmelioides Mont. Ann. Sci. Nat. II. **6**: 333. 1836.
Hypocrea parmelioides Mont. Syll. 210. 1856.
Hypocrea riccioidea Berk. Outl. Brit. Fungi 383. 1860.
Dozya riccioidea Karst. Myc. Fenn. **2**: 221. 1873.
Hypocreopsis riccioidea Karst. Myc. Fenn. **2**: 251. 1873.
Hypocrea digitata Ellis & Everh. Jour. Myc. **1**: 42. 1885.

Stroma radiating from a common center and consisting of several much-divided branches or lobes which extend entirely

around the substratum; lobes 2–3 mm. in diameter and subcylindrical, closely appressed and covering the substratum for a distance of 5 cm., color yellowish, becoming brown or brownish-black with age, upper surface roughened by the slightly protruding necks of the perithecia; perithecia immersed; asci cylindrical or slightly clavate, 8-spored, 80–90 × 12 mic.; spores elliptical, ends obtuse, a little curved, 1-septate, not constricted, hyaline, 25 × 10 mic. (*pl. 20, f. 1–2*).

On partially decayed branches.

TYPE LOCALITY: Mecklenburg, Germany.

DISTRIBUTION: N. Hampshire.

ILLUSTRATIONS: Bolton, Fungi Halifax 4: *pl. 182;* Ellis & Everh. N. Am. Pyrenom. *pl. 11, f. 1–3;* E. & P. Nat. Pfl. 1[1]: *f. 244 A.;* Tode, Fungi Meckl. *pl. 2, f. 15.*

SPECIMENS EXAMINED: N. Hampshire, *Miss Minns.*

The species is very distinct in the finger-like branching of the stroma.

2. **Hypocreopsis tremellicola** (Ellis & Everh.)

Hypocrea tremellicola Ellis & Everh. N. Am. Pyrenom. 85. 1892.

Stroma effused, more or less cottony, covering the host; perithecia numerous, immersed with the ostiola slightly protruding, darker than the subiculum; asci cylindrical, 8-spored, 60–75 mic. long; spores 1-seriate, elliptical, slightly smaller toward the base, hyaline, 1-septate, 7–8 × 3 mic.

On *Tremella albida.*

TYPE LOCALITY: Ohio.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: Ohio, *Morgan* (type).

In color and general appearance of the stroma this species resembles *Hypocrea latizonata* Peck but differs in that the asci are 8-spored instead of 16-spored.

3. **Hypocreopsis consimilis** (Ellis)

Hypocrea consimilis Ellis, N. Am. Fungi *158.*

Stroma orbicular or elliptical, convex, 2–3 mm. in diameter, brick-red, wrinkled, fleshy; asci clavate to cylindrical, 60–70 × 3.5–4 mic.; spores 1-seriate, hyaline, 10–12 × 3.5–4 mic.

On dead *Azalea viscosa.*

TYPE LOCALITY: N. Jersey.

DISTRIBUTION: Known only from type locality.

ILLUSTRATIONS: Ellis & Everh. N. Am. Pyrenom. *pl. 11, f. 8–9.*

EXSICCATI: Ellis, N. Am. Fungi *158.*

32. OOMYCES Berk. & Broome, Ann. Mag. Nat. Hist. **7**: 185. 1851

Coscinaria Ellis & Everh. Jour. Myc. **2**: 88. 1886.

Perithecia few, vertical, contained in a membranaceous sac-like structure; asci cylindrical, 8-spored; spores filiform, continuous, hyaline, as long as the ascus.

TYPE SPECIES: *Sphaeria carneo-alba* Libert.

1. OOMYCES LANGLOISII Ellis & Everh. Jour. Myc. **2**: 88. 1886

Coscinaria Langloisii Ellis & Everh. N. Am. Pyrenom. 69. 1892.

Stroma tuberculiform, erumpent, fleshy, .3–.5 mm. in diameter, pale carneus or horn-colored when fresh, becoming nearly black when dry, of a rather close membranaceous texture on the surface, softer within, surrounded by the ruptured epidermis, convex above; perithecia ovate, minute, with thin, transparent walls, 250–300 × 150–200 mic.; asci cylindrical, 150–200 × 5 mic.; spores filiform, as long as the ascus, hyaline, continuous, 1 mic. thick.

On dead stems of *Vigna luteola.*

TYPE LOCALITY: Louisiana.

DISTRIBUTION: Known only from type locality.

ILLUSTRATIONS: Ellis & Everh. N. Am. Pyrenom. *pl. 17, f. 5–9.*

SPECIMENS EXAMINED: Louisiana, *Langlois* (type).

33. BARYA Fuckel, Symb. Myc. 93. 1869

Perithecia fleshy, becoming hard in drying, seated in a loose cottony conidia bearing mycelium; conidia oblong, obscurely 1-septate, obtuse at the ends; asci elongated, lanceolate, tapering above and below, with a globose apex; spores filiform, simple, about as long as the ascus, hyaline.

TYPE SPECIES: *Barya parasitica* Fuckel.

BARYA PARASITICA Fuckel. Symb. Myc. 93. 1869

Perithecia gregarious almost crowded yellowish-white, surrounded at the base with a white mycelial growth giving the

whole cluster which is about 3 or 4 mm. in diameter a decidedly whitish appearance; perithecia ovoid, tapering into a rather long neck, almost flask-shaped, rough, 200 × 325 mic.; asci at first very slender tapering above, with a knob-like structure at the apex, becoming broader as they mature, about 200 × 5–6 mic.; 8-spored; spores filiform, nearly as long as the ascus, simple.

On *Bertia moriformis* on wood and (decaying material?) on the ground.

TYPE LOCALITY: Europe.

DISTRIBUTION: New York.

ILLUSTRATIONS: Fuckel. Symb. Myc. *pl. 4, f. 18;* Peck, Ann. Rep. N. Y. State Mus. **43**: *pl. 4, f. 13* to *17;* Winter, Rabenh. Krypt. Fl. **1**[2]: 84, *f. 1–4.*

SPECIMENS EXAMINED: New York City, *Seaver.*

The above description is from a specimen collected by the author on Sept. 24, 1906, in a swampy place in New York City. The specimen when collected, looked decidedly white to the unaided eye and consisted of a rather dense cluster of perithecia about 3 or 4 mm. in diameter, each perithecium surrounded by a white mycelial growth and the whole cluster growing on some kind of decaying material on the ground. The specimen differs a little from Fuckel's description in that the perithecia are of a dirty yellowish-white instead of yellowish-green and in the habitat. But since it was impossible to determine from the specimen collected, the kind of material on which the plants were growing and as they conform very well in other characters they are referred to this name.

Our specimen is evidently the same as Mr. Peck's variety *cespitosa.** The asci are very long and are characterized by the knob-like structure at the apex. Fuckel describes the knob as being at the base of the ascus but Mr. Peck states that the knob is at the apex as it is also in our specimen. This mistake could easily occur however since when the asci are removed from the perithecia it is difficult to determine which is the apex and which the base. The asci in Fuckel's specimens are described as being 146 by 8 mic. The asci are variable in length but the measurements taken here show them to be as long as 200 mic. but the

* Peck, Ann. Rep. N. Y. State Mus. **43**: 79. 1890.

immature asci are very much smaller. The spores are long and very slender and no septa could be distinguished. It is difficult to determine the number of spores when enclosed in the ascus but occasionally an ascus may be found broken with the thread-like spores protruding and in this case they may be easily counted. This species is probably rare.

34. TYPHODIUM Link, Abhandl. Akad. Wissensch. Berl. **1824**: 175. 1826

Epichloe (Fries) Tul. Fung. Carp. **3**: 24. 1865.

Stroma effused, subfleshy, at first pale becoming bright orange, forming rings or sheaths about the stems of grasses; perithecia immersed or with the ostiola protruding; asci cylindrical, 8-spored; spores filiform, many-septate.

TYPE SPECIES: *Sphaeria typhina* Pers.

1. **Typhodium typhinum** (Pers.)

Sphaeria typhina Pers. Ic. et Descr. **1**: 21. 1798.
Sphaeria spiculifera Sow. Engl. Fungi, *pl. 274.* 1803.
Dothidea typhina Fries, Syst. Myc. **2**: 553. 1822.
Stromatosphaeria typhina Greville, Scot. Fl. **4**: *pl. 204.* 1826.
Cordyceps typhina Fries, Summa Veg. Scand. 381. 1849.
Epichloe typhina Tul. Ann. Sci. Nat. IV. **13**: 18. 1860.

Stroma effused, subfleshy, at first pale, becoming bright orange, forming sheaths 2–5 cm. in length, about the stems of various grasses; conidia elliptical, hyaline, 4–5 × 3 mic.; perithecia thickly scattered, partially to entirely immersed, soft, membranaceous, similar in color to the stroma, with a rather prominent ostiolum; asci cylindrical, very long, 8-spored; spores nearly as long as the ascus, in a close fascicle, about 2 mic. in diameter, many-septate (*pl. 20, f. 17–18*).

On living grasses: *Agropyron divergens, Agropyron occidentale, Calamagrostis canadensis, Dactylis glomerata, Elymus virginicus, Hystrix hystrix, Koeleria cristata, Panicularia nervata* and *Stipa* sp.

TYPE LOCALITY: Europe.

DISTRIBUTION: N. York to Washington and Mexico.

ILLUSTRATIONS: Greville, Scot. Crypt. Fl. *pl. 204;* Pers. Ic. et Descr. **1**: *pl. 7, f. 1;* Sow. Engl. Fungi *pl. 274.*

EXSICCATI: Ellis & Everh. N. Am. Fungi *185;* Griffiths, W. Am. Fungi, *19, 185;* Wilson & Seaver, Ascom. & Lower Fungi, *80.* Other specimens examined: Delaware, *Commons;* Florida, *Tracy;* Iowa, *Holway;* Missouri, *Galloway;* N. York, *Clinton;* Mexico, (*Holway?*); Ohio, *Morgan;* S. Dakota, *Griffiths,* Washington, *Piper;* Wisconsin, *Davis.*

The hosts cited above are given on the authority of the collectors as the specimens in most cases are not sufficient for determination of the host. Mr. Peck also reports the species on *Carex* sp.

HYPOCRELLA Sacc. Michelia 1: 322. 1878

Stromata patellate or effused, bright colored, often becoming darker with age, fleshy; perithecia immersed or with the ostiola slightly protruding; asci cylindrical, 8-spored; spores filiform, often many-septate and occasionally separating into segments.

TYPE SPECIES: *Hypocrea discoidea* Berk. & Broome.

Hypocrella Tamoneae Earle sp. nov.

Stromata scattered, hypophyllous, 1–1.5 mm. in diameter, black (at least in aged specimens), suborbicular, crust-like, superficial; perithecia crowded, prominent, finally collapsing, 200–250 mic. in diameter; ostiola perforate, large, somewhat irregular; asci cylindrical, short-stipitate, 80–100 × 7–8 mic.; spores thread-like, very slender, equalling in length the ascus, spirally coiled, about 80 × .75 mic.; paraphyses numerous.

On living leaves of *Tamonea* sp.

TYPE LOCALITY: Porto Rico.

DISTRIBUTION: Known only from type locality.

SPECIMENS EXAMINED: Porto Rico, *Underwood & Griggs* (type).

DOUBTFUL SPECIES

Hypocrella Sloaneae Pat. Duss. Enum. Champ. Guadel & Mart. 80. 1903.

Stromata ochraceous, whitish, hemispherical, 2–5 mm. in diameter, covered with the perithecia; perithecia exserted, ovoid of the same color with the ostiola brownish; asci elongated, 12–15 mic. in diameter; spores filiform, soon breaking into fusoid segments; segments hyaline, 9–12 × 2–3 mic.

On the under surface of leaves of a *Sloanea.*

Hypocrella phyllogena (Mont.) Speg., Duss. Enum. Champ. Guadel. & Mart. 80. 1903.

Pulvinate, hemispherical, base constricted, orange; perithecia peripheral, erect, ovate, ostiola punctiform, bright purple, nestling in a stroma of similar color; spores filiform, breaking into segments.

On leaves of *Myrcia octopleura.*

A specimen of this species from the herbarium of Patouillard is sterile.

EXCLUDED SPECIES

Hypocrella atramentosa (Berk. & Curt.) Sacc.
Hypocrella Hyphoxylon (Peck) Sacc.

DOUBTFUL GENERA

GLAZIELLA Berk. Vidensk. Medd. Nat. For. Kjoben. **1879–80**: 31

"Stroma subglobosum laeticolor; perithecia pallida, gelatina repleta."

TYPE SPECIES: *Glaziella vesiculosa* Berk.

GLAZIELLA AURANTIACA (Berk. & Curt.) Sacc. Syll. Fung. **2**: 582. 1883

Xylaria aurantiaca Berk. & Curtis, Jour. Linn. Soc. **10**: 382. 1868.

"Subglobosa, inflata, aurantiaca, polita, subtus pallidior, ostiolis impressis."

"On the ground in woods without apparent attachment. The specimens are unfortunately not mature, but the species belongs to the same category as *X. compuncta.*"

The species is bright orange in color the dried specimens becoming much faded. The structure resembles the thin skin of some fruit and is filled with glands which have been described as perithecia.

A specimen of this species was first referred to the writer by Prof. L. M. Underwood having been collected by him as a fungus. Owing to the absence of fruit it was impossible to determine the species and, in fact, we were not entirely convinced that it was a fungus although sections seemed to show mycelial structure.

In the winter of 1908 other specimens of the same species were collected in Jamaica by Dr. W. A. Murrill. During the winter of 1909 in working over the Hypocreales in the collections of the N. Y. Botanical Garden a specimen was found in the Ellis collection (*Cockerell No. 49*) labeled *Hypomyces alboluteus* Ellis & Everh. To this packet was attached a note stating that it was typical *Glaziella aurantiaca* Berk. & Curtis according to Massee. Although somewhat faded in color the specimen is identical with specimens collected in the West Indies by Prof. L. M. Underwood and Dr. W. A. Murrill. This species has also been recently collected in Santo Domingo by Mr. Norman Taylor.

EXPLANATION OF PLATE 20

1–2. *Hypocreopsis lichenoides* (Tode) Seaver. 1, gross characters, natural size; 2, portion of ascus with spores, × 350.

3–5. *Hypomyces Lactifluorum* (Schw.) Tul. 3, a gill fungus infected with the parasite, natural size; 4, section through the stroma showing perithecia, partially diagrammatic; 5, ascus with spores, × 350.

6–8. *Hypocrea rufa* (Pers.) Fries. 6, plants natural size; 7, section through the stroma showing perithecia; 8, ascus with spores, × 350.

9–10. *Hypocrea latizonata* Peck. 9, two plants of *Cyathus striatus* infected with the parasite, natural size; 10, ascus with spores, × 350.

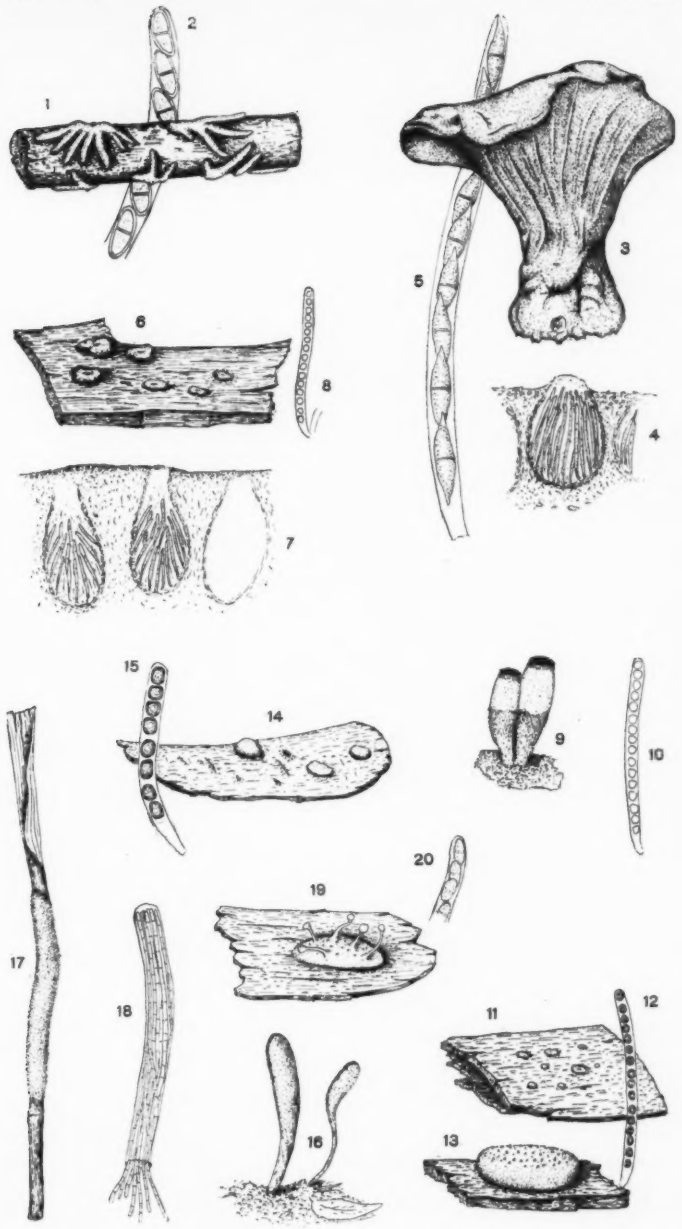
11–13. *Chromocrea gelatinosa* (Tode) Seaver. 11, several plants natural size; 12, ascus with spores, × 350; 13, a single plant enlarged.

14–15. *Chromocreopsis cubispora* (Ellis & Holw.) Seaver. 14, several plants natural size; 15, ascus with spores, × 350.

16. *Podostroma alutaceum* (Pers.) Atk. Two plants natural size.

17–18. *Typhodium typhinum* (Pers.) Seaver. 17, stem of grass infected with the parasite; 18, portion of ascus with spores, × 350.

19–20. *Stilbocrea intermedia* (Ferd. & Winge) Seaver. 19, plant enlarged; 20, portion of ascus with spores, × 350.



HYPOCREAE

EXPLANATION OF PLATE 21

The spores on this plate were drawn with the aid of the camera lucida, the object being to show the comparative size and form of the spores of the different species of *Hypomyces* and *Peckiella*, × 500. The drawings are from type material where such material is available. In a few cases this could not be obtained.

1. *Peckiella viridis* (Albert. & Schw.) Sacc.
2. *Peckiella Banningiae* (Peck) Sacc. Drawn from type material.
3. *Peckiella transformans* (Peck) Sacc. Drawn from cotype.
4. *Peckiella hymenii* Peck. Drawn from type material.
5. *Peckiella lateritia* (Fries) Maire. Drawn from material obtained from the herbarium of Fries and doubtless determined by him.
6. *Peckiella camphorati* (Peck) Seaver. Drawn from type material.
7. *Hypomyces Lactifluorum* (Schw.) Tul. Drawn from type material.
8. *Hypomyces apiculatus* Peck. From fresh material determined by Dr. Peck.
9. *Hypomyces aurantius* (Pers.) Tul. From herbarium material.
10. *Hypomyces rosellus* (Albert. & Schw.) Tul. From herbarium material.
11. *Hypomyces macrosporus* Seaver. From type material.
12. *Hypomyces hyalinus* (Schw.) Tul. Drawn from type material.
13. *Hypomyces aureo-nitens* Tul. Drawn from Ohio material.
14. *Hypomyces citrinellus* (Ellis) Seaver. Drawn from type material.
15. *Hypomyces papyraceus* (Ellis & Holw.) Seaver. From type.
16. *Hypomyces chrysospermus* (Bull.) Tul. From herbarium material.
17. *Hypomyces polyporinus* Peck. Drawn from cotype material.

SPORES OF PECKIELLA AND HYPOMYCES

A NEW FOSSIL POLYPORE

ARTHUR HOLLICK

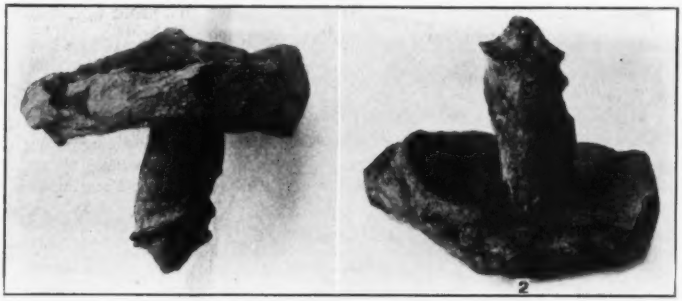
Pseudopolyporus carbonicus gen. et sp. nov.

Pileus about 4.4 cm. in diameter, approximately flat on top with uneven surface, slightly concave beneath with evenly and minutely roughened and pitted surface, margin rather abruptly inflexed. Stalk central or slightly eccentric, cylindical, about 2.8 cm. in length and 1.2 cm. in diameter, with conical base. (*Figs. 1, 2.*)

Carboniferous. Elk Ridge Colliery, West Virginia.

Type in the Museum of the New York Botanical Garden.

This specimen was brought to light during a recent examination of a collection of carboniferous plants from West Virginia, included in the materal deposited with the Garden by Columbia University in 1901. Neither the name of the collector nor the



FIGS. 1, 2. *Pseudopolyporus carbonicus.*

date of collection is recorded, the labels merely reading: "Fossil plants below Seam 3, Elk Ridge Colliery, Pocohontas Field, W. Va." This colliery is situated near Ennis, McDowell County, in the southern part of West Virginia.

The fossilizing medium is a highly ferruginous, fine-grained arenaceous shale, which has completely replaced the vegetable

tissue. In fact, the question may be raised whether the specimen is actually of organic origin. The occasional striking similarity of purely inorganic concretions to living organisms, both animal and vegetable, is well known; but in this instance the resemblance to a hymenomycetous fungus appears to be too perfect to be regarded as an accidental simulation.

It is apparently referable to the Polyporaceae, as indicated by the character of the under surface of the pileus, and may be compared with *Polyporus Polyporus* (Retz.) Murrill, so far as its nearest living relationship is concerned; but its antiquity should preclude a reference to the living genus *Polyporus,* and it is clearly different from any of the fossil forms described under that genus or under the fossil genus *Polyporites,* all of which are from the Tertiary or more recent geological horizons, except *Polyporites Bowmanni* Lindley and Hutton,* from the Carboniferous of England, which is generally considered by paleontologists to be a fish scale and not a fungus. In fact, the only fossil forms with which our specimen may be even remotely compared are *Hydnum argillae* Ludwig,† and *Agaricites Wardianus* Meschinelli,‡ both of them from Tertiary horizons.

The generic name is designed to indicate its probable botanical affinities and the specific name its geologic age.

NEW YORK BOTANICAL GARDEN.

* Foss. Fl. Great Britain 1: 183, *pl. 65, f. B1 and B2.* 1831–33.

† "Fossile Pflanzen aus der Altesten Abtheilung der Rheinisch-Wetterauer Teritär-Formation." Palaeontog. 8: 57, *pl. 8, f. 1, 1a–1c.* 1859.

‡ "Di un Probabile Agaricino Miocenico." Atti Soc. Veneto-Trentina Sci. Nat. 12[2]: 312, *pl. 8.* 1891.

NEWS AND NOTES

Mr. Frank D. Kern, of Purdue University, spent the month of January at the Garden, continuing his studies of the Uredineae of North America.

Dr. M. A. Howe recently returned from an expedition to Panama made primarily for the purpose of collecting marine algae. A number of fungi that inhabit marshy ground and driftwood were secured on this expedition. The February JOURNAL contains Dr. Howe's report.

A monograph by Dr. C. H. Kauffman of the fifty-six species of *Russula* found in the state of Michigan has recently appeared as a reprint from the eleventh report of the Michigan Academy of Science. It should prove of great value to students of this very difficult genus of gill-fungi.

Several species of Boletaceae have been treated popularly, with illustrations from growing plants, in an article by Mr. W. H. Ballou in the Scientific American Supplement for December 18, 1909.

Mr. Norman Taylor returned from Santo Domingo on January 2, bringing with him 1,700 specimens of plants for the Garden herbarium, among them several specimens of fungi, the perishable species of which were illustrated in colors by Mrs. Taylor. A full account of Mr. Taylor's experiences appeared in the JOURNAL of the Garden for January.

Volume 9, part 3, of North American Flora, containing descriptions of the Boletaceae and Chantereleae by W. A. Murrill, and the genus *Lactaria* by Gertrude S. Burlingham, appeared

February 3, 1910. Several new genera and new species are published in this part.

Professor Bruce Fink, of Oxford, Ohio, has begun a study of the Graphidaceae, and wishes to see as much newly collected material from tropical regions as can be secured. He would be glad to receive such collections for determination or to correspond with collectors in any tropical or subtropical regions.

"Some Problems in the Evolution of the Lower Fungi" (Annales Mycologici 7: 441–472. 1909), by Professor G. F. Atkinson, recently appeared as Publication 43 of the Botanical Society of America, being the address of the retiring president delivered at the Baltimore meeting in 1908. The author advances a number of strong arguments in support of the theory that the lower fungi are derived from unicellular organisms, either colorless or chlorophyll-bearing, rather than from the confervoid or siphonaceous algae.

Dr. W. A. Murrill returned from Mexico January 29 with 2,000 specimens of fleshy and woody fungi, collected at various elevations from the vicinity of Cordoba and Jalapa on the east to Colima and Tecoman on the west. Accompanying the collection are 120 colored illustrations of the more perishable species, drawn by Mrs. Murrill. Many interesting original photographs were also secured. A full account of this expedition will appear in the JOURNAL of the Garden for March.

The gray squirrels in the Hemlock Grove have found the severe winter very trying without their accustomed store of chestnuts. Mr. E. W. Humphreys recently observed one of them making a meal on *Stereum hirsutum,* a leathery fungus occurring commonly on dead wood, which would seem unpalatable to the last degree. During the summer, squirrels are very fond of species of *Russula,* and other fleshy forms appearing on the forest floor, and red squirrels in Alaska have been known to carry fleshy forms into the trees and preserve them for future use; but I believe this is the first instance recorded where a tough form like *Stereum* has been so used.

The danger to buildings from the dry rot fungus (*Merulius lacrymans*) has not been recognized in this country as it has in Europe and builders have been allowed to use unseasoned wood to a large extent. A recent investigation in New York City by Professor I. H. Woolson, of Columbia University, brought to light an astonishing condition of affairs in a great number of wooden buildings, which may collapse as did the Gledhill factory unless speedily repaired.

The first annual meeting of the American Phytopathological Society was recently held in Boston in connection with the meetings of the A. A. A. S. A large number of interesting papers on plant diseases were presented. The following officers were elected for the ensuing year: *President,* F. L. Stevens; *Vice-president,* A. F. Woods; *Secretary-Treasurer,* C. L. Shear, U. S. Department of Agriculture, Washington, D. C.; *Councillors,* L. R. Jones, A. D. Selby, and H. H. Whetzel.

Bulletin 63 of the department of agriculture of the central experimental farm, Ottawa, Canada, reports an outbreak in Newfoundland of the very serious potato disease known as potato canker (*Chrysophlyctis endobiotica* Schilb.). This is the first record of this pest for America, it having been formerly known only in Europe.

The presence of the disease cannot be detected until the tubers are lifted from the ground, and, when present, scarcely a healthy potato can be found. The disease first makes its appearance in the eyes of the potato and is here characterized by an abnormal development of the shoot, giving rise to small nodules of a rusty-brown color. Later, the entire potato is attacked and is often completely decomposed.

This is one of the most serious pests of the potato known and the above bulletin is issued as a warning, especially to the potato growers of Canada. It is requested that any suspicion of the presence of this disease be at once reported to the station, together with specimens of the diseased plants.

The following review of Mr. M. C. Potter's paper, "Uber eine Methode, parasitäre Krankheiten bei Pflanzen zu bekämpfen" (Centralb. f. Bakt. 2 ser. 23: 379–384. 1909), has been kindly contributed by Mr. E. D. Clark:

Pseudomonas destructans is the cause of the so-called "white rot" of the beet. This parasite secretes an enzyme, cytase, which dissolves the cell-walls of the plant, allowing the toxin of the parasite to come into direct contact with the protoplasm of the host, which is thus quickly destroyed. Both the cytase and toxin of *P. destructans* are very powerful, making the organism very virulent. In many cases the products of the life activities are toxic to the growth of a given plant or animal if not removed. This is true in the case of the present organism, for the author found that it produces substances toxic to its further growth, whatever it grows upon. The author's experiments indicate that the toxin thus produced by the growth of the parasite is able to withstand boiling, while the cytase, like most enzymes, is completely destroyed by such treatment. Some of the solutions containing the toxin and cytase were concentrated by vacuum distillation at 60°, which did not alter the toxin, but destroyed the activity of the cytase. In all concentrations, including that of the original culture liquid, the toxin solutions completely stopped further growth of *P. destructans*, both on the beet and in other nutrient media, and, also, as seen under the microscope, all movement was immediately inhibited. The toxin solution is specific in its action only on the parasite producing it, but it also shows a certain destructive effect on the host cells, although the latter soon heal over, since no cytase is present to destroy the cell-walls. Next, the author prepared in the same manner toxin solutions from *Penicillium italicum*, which is the cause of a destructive disease of oranges, lemons, etc. Ths solution showed exactly the same specific inhibiting qualities shown by that of *P. destructans*. From these observations, the author thinks it possible that such toxin solutions obtained in a similar way from growths of bacteria, fungi, etc., might prove to be of great practical importance in combating the ravages of these organisms.